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JOURNAL OF THE STATISTICAL SOCIETY,

MARCH, 1877.

Statistical Results *of the* Recent Treaties *of* Commerce *between* Different States *of* Europe.

By Leone Levi, Esq., F.S.A., F.S.S., *Professor of the Principles and Practice of Commerce in King's College, London; Doctor of Economic Science; and of Lincoln's Inn, Barrister-at-Law.*

[Read before the Statistical Society, 19th December, 1876.]

The treaty of commerce concluded between the United Kingdom and France on the 23rd January, 1860, inaugurated a new era in the commercial policy of many countries in Europe. The free trade measures which Sir Robert Peel introduced during his memorable administration in 1842, and those adopted by successive Chancellors of the Exchequer in England, had already borne goodly fruit,* but other nations had as yet done but little in the way of advancing commercial freedom, and France especially still maintained her restrictions and prohibitions. She did, indeed, possess a School of Economists of the highest order. Quesnay had long proclaimed the principle that the surest, the most exact, and the most profitable commercial policy, whether for the nation or the State, consisted in the full freedom of competition. M. Mercier de la Rivière had affirmed that the particular interests of individuals should never be separated from the common interests of the nation. Mirabeau, Turgot, Dupont de Nemours, J. B. Say, Michel Chevalier, Wolowski, Garnier, had been as faithful to, and as pronounced in the cause and advocacy of, sound economic principles. But, as with the seers of old, their warnings and teaching remained unheeded and misunderstood.

Nor is it strange after all. Did not the "Wealth of Nations," the product of the immortal Adam Smith, remain a dead letter in

* Exports from the United Kingdom of British produce and manufactures:—

	£
1842	47,285,000
'60	135,900,000
Increase	189 per cent.

England for half a century? Was not Ricardo equally unsuccessful in creating any immediate change in the commercial policy of England? Had it not been for that noble band of manufacturers and merchants, known as the Anti-Corn Law League, and headed by Richard Cobden and John Bright—had it not been for the fatal disease in the potatoes of 1845 and 1846, which taught our senators wisdom—England would probably even now be suffering under a protectionist tariff and a restrictive corn law. In France no such influence had been at work. No peripatetic philosopher had gone about the country teaching the people their economic rights. And the Government, often weak and ignorant as to the true mode of promoting national prosperity, sought to secure alternately the support of landowners, miners, and manufacturers, as best it could, at the sacrifice of the public good. The moment, however, Napoleon III felt himself sufficiently strong in power to be able to withstand the influence and obstruction of interested parties, the course became clear, and with a vigour and energy worthy of the occasion he shook off the chain of a traditionary and retrograde policy, and concluded the celebrated treaty which will for ever stand associated not only with his own name but with the names of the celebrated economists who were parties to the negotiation.

Hitherto,* treaties of commerce had been concluded for the purpose of extracting commercial privileges from one nation at the expense of another. They were in most cases the offshoots of a commercial system founded on error, and administered by caprice. They were dictated by political rather than by economic motives. They were frequently the causes of war and contention. The treaty of commerce of 1860 had for its scope the extension of commercial freedom. Whilst in the highest sense a political measure—for it did cement nations in the bonds of peace—its bearings were essentially economical. Regarded from a scientific aspect, political economists might have objected, and did object, to resorting once more to the erroneous system of subjecting the economic policy of the State to the complications of diplomacy. Having faith in the doctrines of free trade, England had been for years liberating industry after industry from the trammels of Customs' duties, without reference to the policy of other nations, and regardless of, though not indifferent to, any reciprocal treatment on their part. Mr. Cobden himself was not in favour of treaties of commerce. In one of his earlier speeches he said: "I never thanked the foreign

* The Methuen Treaty of 1743 secured the easier introduction of British goods into Portugal in return for the admission of Portuguese wine into Great Britain at 33 per cent. less duty than would be imposed on French wines. By a treaty between Belgium and France in 1834, Belgium removed certain prohibitions on imports by land, on condition that France would establish differential duties in her favour on coals and iron.

" minister who came with a treaty of commerce from China or " Borneo, St. Domingo or Russia, binding them to extend their " commerce with this country and to relax their restrictions, should " that treaty be obtained either by force, chicanery, or fraud; for, " depend on it, a policy so enforced will react, and we shall never " make progress in the principles which we advocate until we leave " it to other countries to take the course they believe to be best for " their interest, after calm consideration, and until they have seen, " by the example England has set, that the free trade adopted by " her was beneficial to her own interests." Nevertheless, in this case, the greater number of English economists, always more practical than theoretical, seeing in the treaty of commerce negotiated by Cobden and Chevalier a ready means for advancing commercial freedom, gladly withdrew their objection to the form, and accepted the substance, even though by so doing it might appear that the nation was swerving from a position alike independent and dignified. In the negotiation of the French treaty, no chicane, no fraud, no force was exercised, and if, under the system of government then prevalent in France, no Parliamentary sanction was required, it was a satisfaction to England to know that the principles of the treaty were in accord with the best interests of the French nation. It was not without reason, indeed, that the reporters who examined the measure said: " A nos yeux, et les " modifications du tarif anglais, et la réforme de notre législation " douanière, convergent au même but, préparent à un égal degré de " nouveaux éléments de prospérité publique pour les deux pays. " Cette lutte pacifique n'amènera ni victoires, ni défaites, mais " produira de louables émulations, des enseignements mutuels, des " perfectionnements réciproques. Inspirées par des sentiments de " justice et de bienveillance mutuelle qui animent les Gouverne- " ments respectifs, ces conventions assureront le réglement équitable, " et le développement des relations entre les deux Etats, et con- " solideront l'alliance des deux peuples."

By the treaty of commerce of 1860, France engaged to abolish all prohibitions, and to admit certain articles of British produce and manufacture at duties not exceeding 30 per cent. *ad valorem*, to be further reduced to duties not exceeding 25 per cent. from the 1st October, 1864. Britain, on the other hand, bound herself to abolish the duties on French silks and other manufactured goods, and to reduce the duties on French wines and brandies. As regards coals, France engaged to reduce the import duty, and both contracting parties engaged not to prohibit exportation of coal, and to levy no duty upon such exports. Whilst both contracting parties engaged to confer on the other any favour, privilege, or reduction in the tariff of duties on imports on the articles mentioned in the

treaty which the said power might concede to any third power; and also not to enforce, one against another, any prohibition of importation or exportation which should not at the same time be applicable to all other nations. The sum and substance of the treaty was, that France engaged to act more liberally for the future than she had done for the past, and England made another step in the way of liberalising her tariff,* and placing all her manufactures under the wholesome and invigorating influence of free competition. Nor was the treaty allowed to remain limited to France and England, for forthwith after its conclusion both France and England entered into similar treaties with other nations.† And inasmuch as under existing treaties other nations were bound to give to England as good treatment as they gave to the most favoured nations, the restrictions theretofore in existence in countries not originally parties to the French treaty were everywhere greatly reduced, and thereby its benefits extended rapidly over the greater part of Europe.

Though falling far short of economic requirements, the general effect of the alterations made in the tariff of the principal European states by the operation of such treaties, has been to recognise the right of the community to purchase in the cheapest and to sell in

* See Appendix.

† France concluded treaties of commerce with Belgium, 1st May, 1861.
„ Zollverein, 2nd August, 1862.
„ Italy, 17th January, 1863.
„ Switzerland, 30th June, 1864.
„ Prussia, 2nd August, 1862.
„ Spain, 18th June, 1863.
„ Netherlands, 7th July, 1863.
„ Portugal, 11th July, 1866.

England concluded treaties of commerce with Turkey, 29th April, 1861.
„ Belgium, 23rd July, 1862.
„ Italy, 6th August, 1863.
„ Zollverein, 30th March, 1865.
„ Austria, 16th December, 1865.
„ „ 30th „ 1869.

Belgium concluded treaties with Switzerland, 11th December, 1862.
„ Denmark, 17th August, 1863.
„ Italy, 9th April, 1863.
„ Netherlands, 12th May, 1863.
„ Russia, 28th March, 1863.
„ Sweden and Norway, 26th June, 1863.

Austria concluded treaties with Prussia, 29th May, 1865.
„ Belgium, 23rd February, 1867.
„ Italy, 23rd April, 1867.
„ Netherlands, 26th March, 1867.
„ Switzerland, 14th July, 1868.
„ Germany, 9th March, 1868.
„ France, 11th December, 1866.
„ Turkey, 10th May, 1862.

the dearest market; to place within the reach of the masses, or with the least possible restrictions for fiscal purposes only, articles of food, the necessaries of life, from all countries; to remove all obstructions to the imports of raw materials for manufacture, and to allow foreign manufacturers to compete freely with native manufacturers. And what have been the results of the measures thus introduced? Are the people better fed? Are the means of livelihood, the comforts of life, more largely used? Have manufacturers consumed more raw materials? Is the number of factories and workshops larger? Have native producers and manufacturers been able to sustain the increasing competition? Or are the people of the different States poorer, the manufacturers ruined, and the productive power diminished in any one of them? Let us look at the statistical results of the recent treaties of commerce.

Effects of the Treaties on International European Trade.

It is quite evident from the statistics of trade that during the period from the conclusion of the French treaty to the year 1874, the trade of all the parties to the treaties has largely increased. Other causes may have operated to some extent in favour of this increase. The enormous importation of gold from Australia and California and the extension of railways have exercised their influence in the increase of trade.* These causes were, however, quite subordinate in comparison with the influence of free trade. Take the special imports and exports of merchandise of Austria, Belgium, France, Holland, Italy, and the United Kingdom, and we find an absolute increase of upwards of 86 per cent., as follows:—

[000's omitted.]

	Imports (Special).		Increase per Cent.	Exports (Special).		Increase per Cent.
	1860.	1874.		1860.	1874.	
	£	£		£	£	
Austria	21,000,	57,000,	171	26,000,	44,000,	69
Belgium	21,000,	52,000,	147	19,000,	45,000,	137
France	76,000,	140,000,	84	91,000,	148,000,	63
Holland	25,000,	54,000,	116	20,000,	42,000,	110
Italy (1862)	33,000,	52,000,	57	23,000,	39,000,	69
United Kingdom	182,000,	313,000,	72	136,000,	240,000,	76
Total	358,000,	668,000,	86	315,000,	558,000,	77

Whilst during this period the population of these states in-

* See two papers on such subjects, *Journal of the Statistical Society*, vol. xviii, p. 160, and vol. xxix, p. 585.

creased in the aggregate from 128,700,000 to 138,600,000,* or in the proportion of 7·80 per cent., the increase of business has been at the rate of 82 per cent., a fact which must have had the effect of producing a corresponding increase of wealth and prosperity.

To realise, however, how far the commercial treaties have influenced the increase of trade in these countries, we must divide the returns of their trade into trade with Europe and trade with other parts. And having done so we find the important fact that up to 1873 whilst their trade with Europe increased during the period in the proportion of 100 per cent., the trade with all other parts increased only at the rate of 66 per cent. The figures are as follows:—

Trade with Europe.

[000's omitted.]

	Imports (Special).		Increase per Cent.	Exports (Special).		Increase per Cent.
	1860.	1873.		1860.	1873.	
Austria	21,000,	58,000	176	26,000,	42,000,	61
Belgium	16,000,	44,000,	175	18,000,	44,000,	144
France	48,000,	101,000,	110	60,000,	113,000,	88
Holland	17,000,	42,000,	147	16,000,	36,000,	125
Italy	31,000,	48,000,	54	21,000,	39,000,	85
United Kingdom†	89,000,	152,000,	70	47,000,	108,000,	129
Total	222,000,	445,000,	100	188,000,	382,000,	103

[000's omitted.]

	Population.	
	1860.	1870.
* Austria	33,000,	36,000,
Belgium	5,000,	5,000,
France	37,000,	36,000,
Holland	3,000,	4,000,
Italy	22,000,	27,800,
United Kingdom	29,000,	32,000,
	129,000,	140,000,

† The Board of Trade accounts of the United Kingdom do not show the amount of special imports, that is the amount retained for home consumption from different countries. The amount given is that of general imports. The information for 1873 relative to foreign countries is from the reports of secretaries of legations.

Trade with Other Parts.

[000's omitted.]

	Imports.		Increase per Cent.	Exports.		Increase per Cent.
	1860.	1873.		1860.	1873.	
Belgium	5,000,	13,000,	160	1,000,	2,000,	100
France	28,000,	41,000,	46	31,000,	38,000,	22
Holland	8,000,	13,000,	62	4,000,	4,000,	—
Italy	2,000,	2,000,	—	2,000,	6,000,	200
United Kingdom*	121,000,	219,000,	80	89,000,	147,000,	65
Total	164,000,	288,000,	75	127,000,	197,000,	55

* See note p. 6.

[000's omitted.]

	1860.	1873.	Increase per Cent.
Total trade with Europe	410,000,	827,000,	101
Other parts	291,000,	485,000,	66
	701,000,	1,312,000,	87

Another evidence of the increasing traffic in these countries may be found in the total tonnage of sailing and steam vessels engaged in the foreign trade, entered with cargo and in ballast, in the ports of the several countries, which was as follows in the two periods:—

Tonnage Entered.

	1860.	1874.	Increase per Cent.
	Tons.	Tons.	
Austria (1861)	2,618,000†	3,623,000†	38
Belgium	667,000	2,388,000	258
France	4,165,000	7,969,000	91
Holland	1,658,000	2,997,000	80
Italy (1861)	2,516,000	3,745,000	48
United Kingdom	12,173,000	22,369,000	83
Total	23,797,000	43,091,000	80

† Including coasting trade.

Here the same activity of transactions is apparent, and nearly as large a percentage increase in navigation as in the value of imports and exports. What other conclusion can be deduced from such figures but that trade and navigation have alike benefited by

the greater freedom of commerce produced by the treaties in question?

The consumption of imported articles of food is not a sufficient evidence of the condition of the people, especially in agricultural countries, where native produce enters largely into consumption. Nor are the statistics of imports classified in any uniform manner in different countries so as to admit of any exact comparison of the relative consumption at specific times of articles of food, distinct from other articles. In the United Kingdom the increase in the consumption of foreign meat, butter, cheese, eggs, coffee, tea, rice, wine, has been very considerable, as will be seen from the following quantities consumed per head of the people in the respective years:—

	1860.	1875.	Increase per Cent.
Bacon hams ..... lbs.	1·27	8·26	550
Tea ..... ,,	2·67	4·44	66
Rice ..... ,,	1·41	11·68	728
Butter ..... ,,	3·26	4·92	50
Cheese ..... ,,	2·24	5·46	144
Eggs ..... No.	5·83	22·62	287
Sugar, raw and refined .... lbs.	33·30	62·85	88
Wine ..... gals.	0·23	0·53	130

In other countries, though the facts at our disposal are not numerous, there is evidence enough to show that the people everywhere consume more than they were wont to do. The importation of animals and meat was as follows:—

	1861.	1874.	Increase per Cent.
Austria ..... No.	552,000	990,000	79
Belgium ..... ,,	154,000	323,000	109
France ..... ,,	890,000	1,429,000	60
,, meat ..... kilos.	2,500,000	12,000,000	380

The imports of coffee were as follows:—

	1861.	1874.	Increase per Cent.
Austria ..... centners	400,000	652,000	63
Belgium ..... kilos.	19,000,000	19,000,000	—
France ..... ,,	38,000,000	39,000,000	2

Everywhere, moreover, there is a larger average of land under cultivation; everywhere native industry has been and is more active.

Not less satisfactory are the returns respecting the consumption of raw materials. Taking the two principal staples of the textile manufacture, cotton and wool, the increase in the imports and consumption has been considerable:—

[00,000's omitted.]

	Cotton, Raw.		Increase per Cent.	Wool.		Increase per Cent.
	1861.	1874.		1861.	1874.	
Belgium ..... kilos.	15,0	20,0	33	14,0	51,0	264
France ..... ,,	123,0	134,0	9	55,0	117,0	112
Holland..... don	31,0	45,0	45	6,0	8,0	33
Italy ..... kilos.	4,0	31,0	675	4,0	6,0	50
United Kingdom .... cwts.	9,0	12,0	33	93,0	193,0	107

Austria in 1873 was suffering from a financial panic, but since then she has more than recovered from her apparent languor, and, if we compare the average imports of the years 1862-66, the period immediately previous to the treaty, with those of 1874, the increase is most satisfactory. The facts are as follows:—

Imports into Austria.

	1862 to 1866.	1874.	Increase per Cent.
Flax..... cwts.	196,000	605,000	208
Hemp and seagrass .... ,,	95,000	105,000	10
Cotton..... ,,	444,000	1,043,000	134
,, yarn ..... ,,	118,000	218,000	84
Wool ..... ,,	224,000	303,000	35
Woollen yarn..... ,,	33,000	68,000	106

And just as more raw materials of manufactures have been imported, so have the exports of manufactures increased. The exports of cotton, woollen, and silk manufactures from the countries whose statistics we have hitherto compared in 1861 and 1874 have been as follows:—

Exports.

[000's omitted.]

	Cotton Manufactures.		Per Cent. Increase.	Woollen Manufactures.		Per Cent. Increase or Decrease.	Silk Manufactures.		Per Cent. Increase.
	1861.	1874.		1861.	1874.		1861.	1874.	
	£	£		£	£		£	£	
Belgium	550,000	713,000	29	1,100,000	1,600,000	+ 45	—	—	—
France	2,200,000	3,260,000	48	7,500,000	14,000,000	+ 86	13,000,000	15,000,000	15
United Kingdom	38,000,000	60,000,000	58	11,000,000	22,800,000	+ 107	1,400,000	2,100,000	50

Common experience has indeed shown that wherever a nation possesses certain decided advantage for any manufacture or industry, wherever the manufacturers have the command of sufficiency of capital and labour, and are moreover in possession of sufficiency of motive power, there all fear of foreign competition is gratuitous and vain, whilst where no such advantages exist, and where manufacturers have neither the means, or the energy requisite, to support any industry, there all protection is vain, and the effort to foster the same by artificial means must only redound to the injury of the entire community.

We have hitherto dealt exclusively with those countries which came directly within the range of the French treaties; but the same results attended the modification of the tariff in other countries also. In Sweden, Mr. Erskine, Her Majesty's Minister, has reported that in 1856, the import of woollen goods was prohibited, and the production at home amounted to 8,000,000 kroners. In 1873 the prohibition was removed, and the imports permitted at low rates, yet the home production was valued at 11,800,000 kroners. In the course of the seven years from 1851 to 1857, when most branches of industry were protected either by prohibitions or by highly protective import duties, the number of manufactories in Sweden was 2,450, the number of persons employed was 26,528, and the mean annual value of their production amounted to 33,000,000 kroners. In the five years ended 1873, after the great reduction of duties, the mean annual number of manufactories was 2,316, employing 41,290 persons, and producing manufactures valued at 111,000,000 kroners. In Spain, the results of a modified tariff were seen by the increase of imports of cotton from 12,000,000 kilos. in 1849, to 27,000,000 kilos. in 1873, and of iron in bars from 3,600,000 kilos. in 1849, to 47,000,000 in 1873; and in a large increase of all exports in the quinquennial period of 1870 to 1874, as compared with the previous quinquennial period 1865-69.

Portugal, which had long hesitated giving to England the same advantages which she had given to France, on the plea that England unduly taxed her wine, has at last seen it most advantageous for herself to relinquish an untenable position. It was natural for Portugal to ask that England should grant to herself the same privilege as she granted to France, by admitting Portuguese wines at the same rate of duty as French wine. In England, however, the wine and spirit duties are maintained for fiscal purposes only, and the limitation of 26 degrees of spirit for the lowest duty at *1s.* per gallon, has immediate reference to the spirit duties, which produce an enormous revenue. In the language of the Commissioners of Customs, "Wine in its natural state, as produced from "the grape, is charged, on importation into Great Britain, almost

" without exception, with a duty of 1*s.* a-gallon. If the makers or " importers of wine choose to add to such wine manufactured " spirits, which, if made in this country, would be charged with " duty at 10*s.* a-gallon, it is but just that they should be taxed to " the same extent as the British producer of spirits is taxed, and " accordingly, wine to which manufactured spirits has been added, " has to pay an additional tax for that added spirit. This provi- " sion is not limited to Portuguese wines, but is equally applied to " the wines of France and all other countries, including the British " colonies."

Effect of the Treaty of Commerce on our Trade with France.

If from a general view of the operation of the treaties of commerce on European trade, we turn to examine the influence of the French treaty on our trade with France, the results are still more gratifying. The following statistics show that our imports from France rose from 17,000,000*l.* to 47,000,000*l.*, an increase of 176 per cent.; that our exports to France increased to the extent of 185 per cent., and that whilst we consume more butter, cheese, eggs, sugar, brandy, wine, and silk manufacture from France, we are also sending thither more of our cotton and woollen manufactures, more of our earthenware and hardware.

Trade with France.

[000's omitted.]

	Imports from	Exports.			Total Imports and Exports.
		British Produce.	Colonial and Foreign Produce.	Total.	
	£	£	£	£	£
1859	16,871,	4,754,	4,807,	9,561,	26,432,
'60	17,774,	5,250,	7,451,	12,701,	30,475,
'61	17,826,	8,896,	8,531,	17,427,	35,253,
'62	21,675,	9,209,	12,556,	21,765,	43,440,
'63	24,026,	8,673,	14,621,	23,294,	47,320,
'64	25,641,	8,187,	15,638,	23,825,	49,466,
1865	31,625,	9,062,	16,292,	25,354,	56,979,
'66	37,017,	11,700,	14,897,	26,597,	63,614,
'67	33,735,	12,121,	10,901,	23,022,	56,757,
'68	33,896,	10,653,	12,861,	23,514,	57,410,
'69	33,527,	11,438,	11,839,	23,277,	56,804,
1870	37,607,	11,643,	10,340,	21,983,	59,590,
'71	29,848,	18,205,	15,182,	33,387,	63,235,
'72	41,803,	17,268,	11,024,	28,292,	70,095,
'73	44,339,	17,292,	12,904,	30,196,	74,535,
'74	46,518,	16,370,	13,019,	29,389,	75,907,
'75	46,720,	15,357,	11,935,	27,292,	74,012,
Increase per cent., 1859-75	176	223	148	185	180

Imports from France.

[000's omitted.]

	French Wine.	French Silk Manufactures.
	Gals.	£
1859	1,011,	1,733,
'60	2,445,	2,278,
'61	2,187,	4,902,
'62	2,245,	5,313,
'63	2,187,	5,214,
'64	2,723,	5,985,
1865	2,915,	6,782,
'66	3,669,	7,554,
'67	3,771,	7,019,
'68	4,745,	8,403,
'69	4,255,	9,004,
1870	4,779,	10,914,
'71	4,689,	4,836,
'72	5,109,	6,547,
'73	6,243,	7,281,
'74	5,105,	8,756,
'75	5,281,	9,274,
Increase per cent., 1859-75	422	433

Exports to France.

[000's omitted.]

	Cotton Manufactures.	Woollen and Worsted Manufactures.
	£	£
1859	222,	243,
'60	248,	293,
'61	562,	1,036,
'62	678,	1,819,
'63	555,	1,419,
'64	639,	1,320,
1865	733,	1,686,
'66	1,499,	2,786,
'67	1,096,	3,111,
'68	1,105,	1,908,
'69	1,195,	2,186,
1870	895,	2,285,
'71	1,877,	3,274,
'72	2,386,	4,089,
'73	2,181,	3,531,
'74	2,344,	3,751,
'75	1,887,	3,363,
Increase per cent., 1859-75	750	1,283

Imports from France.

Principal Articles.	1860.	1875.	Increase per Cent.
Articles of Food—			
Animals ..... No.	7,620	59,083	675
Butter ..... cwts.	99,022	567,560	473
Eggs (1861) .....gt. 100	1,364,051	4,835,103	254
Potatoes ..... cwts.	302,018	3,055,762	911
Sugar, unrefined..... ,,	547,669	1,919,114	250
,, refined..... ,,	57,008	1,016,843	1,683
Spirits and Wine—			
Brandy ..... galls.	2,222,265	3,945,711	77
Wine ..... ,,	2,445,151	5,280,914	115
Manufactures—			
Flowers, artificial	£113,018	493,210	334
Gloves..... pairs	5,224,248	19,339,296	270
Silk manufacture	£1,135,987	9,274,756	716
Woollen ,, ...	£1,049,347	3,078,459	193
Total value.....	£17,774,000	46,720,000	168

Exports to France.

Principal Articles.	1860.	1875.	Increase per Cent.
Materials for Manufacture—			
Coal..... tons	1,352,016	2,706,210	100
Cotton yarn ..... lbs.	533,931	3,458,486	547
Linen ,, ... ,,	572,585	1,705,893	197
Machinery	£171,020	585,276	242
Painters' colours	£36,082	83,881	133
Manufactures—			
Cotton manufacture ..... yards	10,871,407	87,748,043	707
Linen ,, ... ,,	1,199,379	10,400,010	783
Woollen ,, ... ,,	4,491,216	51,060,518	1,036
Earthenware	£17,377	61,106	251
Hardware ..... cwts.	15,063	148,029	886
Caoutchouc manufacture	£18,472	170,041	844
Haberdashery.....	£44,418	81,913	84
Total value.....	£5,249,980	15,357,128	192

Considerable progress has been made in many States in the direction of a freer and sounder commercial policy, and yet it can scarcely be said that free trade principles are as dominant or popular now as they were ten years ago. The civil war in the United States in 1862-64, the wars in Germany and Austria in 1866, the Franco-Prussian war of 1870, have so increased the financial exigencies of these States,* that not only any further experiments which might endanger the lessening of any branch of revenue became literally impossible, but the temptation has proved irresistable to undo what had been done only a few years before, both for fiscal purposes and for the purpose of assisting forlorn industries. It was under the influence of such hard necessities that the United States, once the paradise of freedom and exemption of taxes, became the most grievously burdened, and the hottest bed of protection. And it has come to this, that public writers there do not hesitate to declare it a chimera to follow the rules of Adam Smith. Considerations of expediency and necessity they say must modify and control the deductions of logic and the plausibilities of theory. It is not only proper in their opinion, but necessary that Government aid should be afforded so as to place native industry in a position of equality. It is well, they say, to raise the price of a manufactured article, for a time, in the expectation that advance in skill and machinery and a more secure place in the market, where conspiracies abroad cannot break in to crush the capital invested, may, in time, afford the same articles at greatly reduced prices. The protectionist party in the United States, I fear, does not realise sufficiently that protection impoverishes many industries to subsidise a few, that it cripples the masses to make the fortune of a few manufacturers, that it hinders imports which might purchase the produce of American labour, and that, in a financial aspect, the collection of the revenue upon 4,000 articles costs five times more than it produces to the treasury.

Effects of the Treaties of Commerce on the Balance of Trade.

An objection, I fear, still exists in the minds of some, that the facilitation of imports only produces a balance of trade which must,

* *Revenue.*

[000's omitted.]

	1860.	1873.	Increase per Cent.
	£	£	
Austria	47,500,	70,000,	47
Belgium	6,200,	8,500,	37
France	54,000,	138,500,	155
Holland	8,300,	8,900,	7
Italy (1862)	19,000,	47,000,	147

in the end, prove ruinous to the State. According to them, the balance is favourable when the exports exceed the imports, but unfavourable when the imports exceed the exports. And why? First—because the balance must be paid in bullion, which no nation should part with, if possible; and, second, because paying in gold is dearer than paying in merchandise. Viewed in this light, England, Belgium, Austria, Italy, are all becoming poorer every year. And though England can afford to import some 50,000,000*l.* or 60,000,000*l.* in excess of her exports, holding as she does so many millions of foreign securities in her hands upon which she is to receive the yearly interest, other countries cannot pursue such a ruinous policy. Alas! such writers are still lingering toward the exploded theories of the mercantile system. They do not understand that gold and silver have no such virtues as to protect the State from misery. They do not realise that the advantage of commerce consists, not in the bringing in of gold, but in the more efficient employment of the productive forces of the world. The statistics of trade are not, indeed, a proper or sufficient basis for calculating the amount of international indebtedness, as they leave out of account the profits of trade, charges of freight and insurance, the difference of valuation, payments of interests on loans, money returned from emigrants, money spent by travellers abroad, and many more items; but in so far as the statistics of trade show that any nation receives more than it gives, and that any nation succeeds in obtaining an extensive command over the resources of other countries, they do clearly indicate that such nation is carrying on a profitable trade, and that she is becoming every year more prosperous. The statistical results of the treaties of commerce leave no room for doubt as to their economic advantages, and with the principles of economic science well appreciated, we need not again refute the fallacies of the balance of trade.

The following tables show a decided tendency to an excess of imports over exports. In 1860, Austria, Belgium, and France were exporting more than they imported. In 1874, the only country that showed a passive balance of trade was France. Collectively these tables show that in the fifteen years between 1866 and 1874, whilst the increase of imports amounted to 71 per cent., the increase of exports was only 35 per cent. But what does this mean but that whilst in 1860 for every pound exported, there were obtained in return 1*l.* 2*s.* 5*d.*, in 1874, for every pound exported, there were obtained in return 1*l.* 3*s.* 8*d.* in the shape of imports.

Balance of Trade.

[000's omitted.]

	Years.	Merchandise.			
		Imports.	Exports.	Excess of Imports.	Excess of Exports.
		£	£	£	£
Austria	1860	21,000,	26,000,	—	5,000,
	'74	57,000,	44,000,	13,000,	—
Belgium	1860	21,000,	19,000,	2,000,	—
	'74	52,000,	45,000,	7,000,	—
France	1860	76,000,	91,000,	—	15,000,
	'74	140,000,	148,000,	—	8,000,
Holland	1860	25,000,	20,000,	5,000,	—
	'74	54,000,	42,000,	12,000,	—
Italy	1860	33,000,	19,000,	14,000,	—
	'74	52,000,	39,000,	13,000,	—
United Kingdom	1860	182,000,	136,000,	46,000,	—
	'74	312,000,	240,000,	72,000,	—

	Years.	Bullion.			
		Imports.	Exports.	Excess of Imports.	Excess of Exports.
		£	£	£	£
Austria	1860	4,000,	6,000,	—	2,000,
	'74	2,000,	2,000,	—	—
Belgium	1860	5,000,	8,500,	—	3,500,
	'74	5,000,	6,000,	—	1,000,
France	1860	24,000,	18,000,	6,000,	—
	'74	4,000,	8,000,	—	4,000,
Holland	1860	1,000,	1,000,	—	—
	'74	2,000,	—	2,000,	—
Italy	1860	—	—	—	—
	'74	400,	300,	100,	—
United Kingdom	1860	23,000,	26,000,	—	3,000,
	'74	33,000,	27,000,	6,000,	—

	Years.	Merchandise and Bullion.			
		Imports.	Exports.	Excess of Imports.	Excess of Exports.
		£	£	£	£
Austria	1860	25,000,	32,000,	—	7,000,
	'74	59,000,	46,000,	13,000,	—
Belgium	1860	26,000,	27,500,	—	1,500,
	'74	57,000,	51,000,	6,000,	—
France	1860	100,000,	109,000,	—	9,000,
	'74	144,000,	156,000,	—	12,000,
Holland	1860	26,000,	21,000,	5,000,	—
	'74	56,000,	42,000,	14,000,	—
Italy	1860	33,000,	19,000,	14,000,	—
	'74	52,400,	39,300,	13,100,	—
United Kingdom	1860	205,000,	162,000,	43,000,	—
	'74	345,000,	267,000,	78,000,	—

In reasoning upon the balance of trade, or upon the general bearings of the statistics of trade in different countries, it is necessary to remember that the mode of collecting and exhibiting them leaves much to be desired. The nomenclature and classification of articles are not the same. Considerable quantities of produce and merchandise are known to pass from one country to another without the cognizance of the Customs authorities. The origin and ultimate destination of imports and exports are seldom traceable. The valuation of imports and exports is by no means certain. If based upon any official rates, it is essentially faulty; if based on the declaration of merchants, it is exceedingly vague. The International Statistical Congress had the subject under consideration, and upon the evidence of facts bearing more especially upon Germany and other inland countries, resolved that "The experience "of recent years has demonstrated that the statistics of interna- "tional commerce, compiled on the basis hitherto supplied, are not "sufficiently correct to derive from them well-founded deductions, "and to ascertain from them the true character of the balance of "trade of several countries. The International Statistical Congress "declares consequently that the amelioration of the system and of "the works on commercial statistics is urgent." It is certainly much to be desired that those valuable exponents of the industrial life of nations should be rendered as correct as they can possibly be made. Substantially, however, the facts exhibited as to the effect of the treaties of commerce on the balance of trade of Austria, Belgium, France, Holland, Italy, and the United Kingdom are beyond dispute, and their uniform testimony leaves no room to doubt as to the general results of such treaties.

Before the end of 1877 all the States which were immediate parties to, or were directly affected by the treaties of commerce, will have to decide as to their renewal or abandonment. In what spirit will they approach this important deliberation. Are the statistical results encouraging or otherwise. In Italy a royal commission was recently appointed to inquire into the condition of Italian industry, and their final report must by this time be in the hands of the Government. France has almost exhausted its strength in inquiries, and we know what came of the futile attempts of M. Thiers to reverse the whole policy. Other countries have had ample time to examine the full bearings of the policy, if not initiated, at least extended by such treaties. The question, indeed, is not whether the form of such treaties should be persevered in, for, as I have already said, much may be said against regulating the commercial policy of any State by treaty obligation, but it is the question of free trade itself. To my mind, however, there can be no hesitation in the matter. Considering the stupendous advantages which have already

followed from the conclusion of such treaties of commerce, which sanctioned, and in many cases introduced, greater freedom in the commercial tariffs of many States of Europe; considering the state of public opinion which has been everywhere manifested not only in favour of such relaxation, but in favour of the treaties themselves; considering that by the operation of such relaxations commerce has been extended, industry strengthened, and good will among nations cemented; and considering above all that the amount of freedom conceded is only an earnest of what must yet be done for the unshackling of the industrial energies of nations, any hesitation or doubt on the renewal of the treaties of commerce is altogether inadmissible.

APPENDIX.

Alterations which have taken place in the Customs tariff of the United Kingdom during the year 1860, under the commercial treaty with France:—

Duties repealed.

Agates.
Apples.
Arms, swords, and cannon.
Brass, manufactures of.
Brocade of gold or silver.
Bronze, manufactures of.
Canes, walking.
„ umbrella or parasol sticks.
Caoutchouc, manufactures of.
Cherries, raw.
China or porcelain ware.
Clocks.
Corks.
Cotton fringes, gloves, stockings, socks.
Earthenware, unenumerated.
Embroidery and needlework.
Feathers, dressed.
Flowers, artificial.
Fruit, raw.
Grapes.
Gutta percha, manufactures of.
Hair, manufactures of.
Hats or bonnets.
Iron machinery.
„ manufactures of.
Jewels and precious stones, set.
Lace, and articles thereof.
Lead, manufactures of.
Leather, manufactures of.
„ boots and shoes.
Leather gloves.
Linen, manufactures of.
Lucifers, of wood.
Medlars.
Morphia and its salts.
Musical instruments.
Oil of almonds, and bays.
„ chemical, essential, or perfumed.
Opera glasses, single.
Pears, raw.
Percussion caps.
Perfumery.
Quinces.
Quinine, sulphate of.
Silk, manufactures of
Stays or corsets.
Sulphuric acid.
Toys.
Turnery.
Watches.
Woollen manufactures.

Duties reduced.

Books, of editions printed in or since 1801.
Millboard.
Paper.
Pasteboard.
Plate, of gold and silver.
Prints.
Spirits
Wine.

The Growing Preponderance *of* Imports *over* Exports *in the* Foreign *and* Colonial Trade *of the* United Kingdom. *By* Stephen Bourne, F.S.S.

[Read before the Statistical Society, 19th December, 1876.]

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Since 1872 a marked alteration has taken place in the relative values of the imports and exports of the United Kingdom. Up to that date, and indeed until the middle of 1873, the general progress of our trade showed a steady increase in both branches, and if here and there special circumstances caused one year to fall short of its predecessor,—the deficit was speedily more than restored—we had come to look upon continual growth as the normal condition of our commerce, and though for about half a century the balance had been in favour of imports, this excess arose from their continuous increase, not as now, partly from the decrease of the exports. For 1872 the difference between the two—the balance of trade as it is usually termed—was 40 millions, for the present year it is fully three times as much, 120 millions. So decided and rapid a change demands more than a superficial inquiry into its causes and effects, and it is hoped that the figures now to be produced will at least aid investigations as deep and searching as the importance of the subject requires.

I.—*Earlier Period of Trade*, 1816-53.

Before considering the particulars furnished from official sources regarding the trade of more recent years, it would have been interesting and useful to have taken a survey of an earlier period, and in so doing to have glanced backward so far as we have any data on which reliance can be placed.

Having this object in view, it would have been possible to

commence with the year 1699, when both imports and exports were each estimated as slightly under six millions. Unfortunately, however, the accounts were kept in what were termed "official values;" that is, a tariff of prices—supposed to represent the values of the various articles, and really doing so at the time when each first become known to, or distinguished in the trade accounts—was used for the purpose of representing quantities by money. Such a system had its use as a means of comparing the current year with its immediate predecessor, but as prices altered, and the relative quantities of goods changed, it would so far depart from accuracy as to be of little worth. For other reasons exporters were called upon to declare the values of their respective shipments, and the collected amounts were recorded, but no such step was taken for the imports until much later on. The figures, therefore, in the following table must be taken with great limitation.

The year 1816, with which the table commences, may be deemed the opening one of a new era in our commercial operations. The long period of continental and other warfare, culminating in the events of 1815, must have so disturbed our trading relations as to render any comparison of prior with succeeding years very unsafe. From that year to 1853 there appears to have been a steady progress in both imports and exports, but not by any means in the same ratio. The figures are here reproduced as an interesting if not an absolutely necessary introduction to the more definite details of the subsequent period; and the "declared" as well as "official" values of the British exports shown for the purpose of correcting many erroneous estimates which have been formed of the worth of our export trade during those years.

In the two columns on the opposite sides of the page will be found (omitting 000's) the yearly total values of the imports and exports as derived from official sources. The middle column on the import side of the table sets forth the value of imported articles exported to foreign countries, which, in any comparison with British exports should be deducted. This is done in the next column, which shows the difference between the two, or the value of the imports retained in the country for home use. Adjoining this will be found the value of goods of home produce and manufacture exported, constituting what may be termed the credit side of the account. The difference between the two, as also that between the right and left hand columns, will give the nearest approach to the preponderance or otherwise of imports or exports it is possible to abstract directly from these records for the years embraced in this table.

TABLE I.—*Value of Goods Imported into, and Exported from, the United Kingdom, from* 1816 *to* 1853, *Computed at the Official Rates; showing also the Declared Value of the British Exports.*

[000's omitted.]

Years.	Foreign and Colonial Merchandise. (Official Values.)			Produce and Manufacture of United Kingdom.		Total Exports. — Official Values.
	Total Imports.	Exported from United Kingdom.	Retained for Home Use.	Official Value.	Declared Value.	
	£	£	£	£	£	£
1816	27,432,	13,481,	13,951,	35,714,	*41,654,*	49,195,
'17	30,834,	10,293,	20,541,	40,111,	*41,818,*	50,404,
'18	36,885,	10,860,	26,025,	42,702,	*46,471,*	53,562,
'19	30,777,	9,905,	20,872,	33,534,	*35,211,*	43,439,
1820	32,472,	10,556,	21,916,	38,394,	*36,424,*	48,950,
'21	30,838,	10,630,	20,208,	40,832,	*36,655,*	51,462,
'22	30,531,	9,228,	21,303,	44,243,	*36,966,*	53,470,
'23	35,798,	8,604,	27,194,	43,827,	*35,357,*	52,431,
'24	37,468,	10,205,	27,263,	48,730,	*38,422,*	58,935,
1825	44,209,	9,169,	35,040,	47,151,	*38,871,*	56,320,
'26	37,814,	10,076,	27,738,	40,966,	*31,537,*	51,042,
'27	44,908,	9,831,	35,077,	52,222,	*37,181,*	62,053,
'28	45,167,	9,947,	35,220,	52,788,	*36,813,*	62,734,
'29	43,995,	10,620,	33,375,	56,218,	*35,843,*	66,838,
1830	46,300,	8,548,	37,752,	61,152,	*38,272,*	69,701,
'31	49,728,	10,745,	38,983,	60,686,	*37,164,*	71,431,
'32	44,611,	11,045,	33,566,	65,025,	*36,451,*	76,070,
'33	45,944,	9,834,	36,110,	69,987,	*39,667,*	79,821,
'34	49,365,	11,562,	37,803,	73,835,	*41,649,*	85,397,
1835	49,029,	12,798,	36,231,	78,360,	*47,372,*	91,158,
'36	57,296,	12,392,	44,904,	85,220,	*53,294,*	97,612,
'37	54,762,	13,235,	41,527,	72,544,	*42,069,*	85,780,
'38	61,258,	12,711,	48,547,	92,454,	*50,062,*	105,165,
'39	62,048,	12,796,	49,252,	97,395,	*53,234,*	110,191,
1840	67,493,	13,774,	53,719,	102,707,	*51,406,*	116,481,
'41	64,444,	14,723,	49,721,	102,180,	*51,635,*	116,903,
'42	65,253,	13,586,	51,667,	100,255,	*47,381,*	113,842,
'43	70,215,	13,956,	56,259,	117,877,	*52,280,*	131,832,
'44	75,449,	14,398,	61,051,	131,558,	*58,584,*	145,957,
1845	85,298,	16,279,	69,019,	134,599,	*60,111,*	150,878,
'46	75,934,	16,303,	59,631,	132,313,	*57,787,*	148,615,
'47	90,922,	20,041,	70,881,	126,131,	*58,842,*	146,172,
'48	93,547,	18,377,	75,170,	132,619,	*52,849,*	150,996,
'49	105,884,	25,562,	80,322,	164,528,	*63,596,*	190,090,
1850	100,469,	21,893,	78,576,	175,437,	*71,368,*	197,330,
'51	110,485,	23,733,	86,752,	190,658,	*74,449,*	214,391,
'52	109,331,	23,328,	86,003,	196,177,	*78,077,*	219,505,
'53	123,099,	27,745,	95,354,	214,327,	*98,934,*	242,072,
38 years	2,267,292,	522,769,	1,744,523,	3,395,456,	*1,845,756,*	3,918,225,

For the reasons above stated, prior to 1854, we have no means of accurately ascertaining in what relation the values of our imports stood to those of our exports, but by a change of system in that year the real import values were obtained, and from this we learn that whilst the market prices of the exports were continually falling, the not unnatural result of improvement and

competition in manufacture, those of the imports were constantly rising, the equally rational effect of demand overtaking supply, and the growing wealth of those who were the purchasers. In that year the actual value of 152 millions of imports stood officially at 124, whilst the true value of 116 millions of exports was represented officially as 243; an official deficit in the one case of 28, and an excess in the other of 127. Reasoning from the official valuation, we should conclude the balance in favour of exports to have been 120 millions, whereas the true figures show it to have been 37 millions in favour of imports. Such being the case with the figures up to 1853, any attempt to deal with them as showing the progressive preponderance either way would be hopeless. An attempt has been made to convert "official" into "actual" for the imports, but it soon became evident that the labour of such an effort would be greatly beyond the worth of the results to be obtained, results too doubtful to support any argument or to guide any judgment. It is probable, however, that in assuming the official value of 14 millions for the imports retained in 1816 to have been really equal to 17, as against 41 of British exports, and the 95 millions in 1853 as really 130 against 99 of exports, we shall not be far wide of the mark. If this be a correct estimate, the foreign goods consumed in this country had between 1816 and 1853 multiplied sevenfold in value, and the exports of British goods only doubled, thus altering the excess from one side of the account to the other. It is probable that the time when the imports overtook the exports was about the year 1825, since when there has been a growing preponderance in their favour.

II.—*Period from* 1854 *to the Present Time.*

From 1854 the import values, as published in the monthly and annual accounts of trade and navigation, assume a new aspect. They still continued to be computed, but upon the basis of the current market values of the articles, and as the declared values of the exports were given by the merchants upon the same foundation, the two sets of figures may be fairly brought into comparison. As such they are given in Table II, which is continued in the same form as Table I, with two exceptions. The official value, although discarded from the Trade accounts, continued until 1870 to be published in the Finance accounts presented annually to Parliament. For information, therefore, and as illustrating the discrepancies between them and the real values, they are inserted in the table as a second line for each year. Another column, too, has been added, in which the exports having been deducted from the imports, the difference is shown as an excess of the latter, and the percentage of this excess upon the export value has been brought out. An average for the twenty-three years 1854-76 inclusive, is likewise

shown. The figures for 1876 may admit of slight alteration when the annual Statement of Trade is issued.

TABLE II.—*In continuation of Table I, from* 1854 *to* 1876, *showing the Computed Real Values of Imports up to* 1870, *the Declared Values of Imports from* 1871, *and of Exports for the whole Period; also the Official Values up to* 1869.

[000's omitted.]

Years.	Foreign and Colonial Merchandise.			Exports.		Excess of Imports.	Per Cent.
	Total Imports.	Exported from United Kingdom.	Retained for Home Use.	Produce and Manufacture of United Kingdom.	Total.		
	£	£	£	£	£	£	
1854	152,389,	18,636,	133,753,	97,185,	115,821,	36,568,	38
	124,420,	*29,820,*		*214,072,*	*243,893,*		
'55	143,543,	21,003,	122,540,	95,688,	116,691,	26,852,	28
	117,400,	*31,504,*		*226,909,*	*258,413,*		
'56	172,544,	23,393,	149,151,	115,827,	139,220,	33,324,	29
	131,937,	*33,424,*		*258,506,*	*291,929,*		
'57	187,844,	24,108,	163,736,	122,066,	146,174,	41,670,	34
	136,215,	*30,798,*		*255,397,*	*286,195,*		
'58	164,584,	23,174,	141,410,	116,609,	139,783,	24,801,	21
	138,159,	*33,888,*		*271,655,*	*305,543,*		
'59	179,182,	25,281,	153,901,	130,412,	155,693,	23,489,	18
	146,644,	*37,231,*		*297,358,*	*334,589,*		
1860	210,531,	28,630,	181,901,	135,891,	164,521,	46,010,	34
	164,736,	*43,538,*		*315,711,*	*359,249,*		
'61	217,485,	34,530,	182,955,	125,103,	159,633,	57,852,	46
	171,213,	*50,158,*		*289,355,*	*339,513,*		
'62	225,717,	42,176,	183,541,	123,992,	166,168,	59,549,	48
	160,699,	*50,957,*		*240,720,*	*291,678,*		
'63	248,919,	50,300,	198,619,	146,602,	196,902,	52,017,	36
	171,913,	*54,915,*		*258,199,*	*313,113,*		
'64	274,952,	52,139,	222,813,	160,449,	212,588,	62,364,	39
	173,962,	*54,955,*		*267,152,*	*322,107,*		
'65	271,072,	52,996,	218,076,	165,836,	218,832,	52,240,	31
	181,806,	*62,454,*		*301,613,*	*364,067,*		
'66	295,290,	49,988,	245,302,	188,918,	238,906,	56,384,	30
	201,196,	*64,373,*		*348,472,*	*412,845,*		
'67	275,183,	44,841,	230,342,	180,962,	225,803,	49,380,	27
	201,121,	*64,750,*		*361,753,*	*426,503,*		
'68	294,694,	48,100,	246,594,	179,678,	227,778,	66,916,	37
	220,887,	*69,474,*		*381,126,*	*450,600,*		
'69	295,460,	47,061,	248,399,	189,954,	237,015,	58,445,	31
	224,320,	*67,106,*		*388,983,*	*456,089,*		
1870	303,257,	44,494,	258,763,	199,587,	244,081,	59,176,	30
'71	331,015,	60,509,	270,506,	223,066,	283,575,	47,440,	21
'72	354,694,	58,332,	296,362,	256,257,	314,589,	40,105,	16
'73	371,287,	55,840,	315,447,	255,165,	311,005,	60,282,	24
'74	370,083,	58,092,	311,991,	239,558,	297,650,	72,433,	30
'75	373,940,	58,146,	315,794,	223,466,	281,612,	92,328,	41
'76	374,000,	55,000,	319,000,	200,000,	255,000,	119,000,	60
	6,088,000,	977,000,	5,111,000,	3,872,000,	4,849,000,	1,239,000,	—
Avrge.	265,000,	43,000,	222,000,	168,000,	211,000,	54,000,	—

Note.—Figures printed thus (152,389) are computed to 1870, declared to 1876, those in *italics* are official.

III.—*Alterations to be made in Relative Values.*

Beginning then with 1854, we leave a period in which arbitrary and antiquated prices were employed to convert quantities into value, and come to one in which the values being based upon existing prices and known market rates, the figures given may be taken as a fair valuation of the goods at the time when they arrive and leave the country. They thus afford satisfactory information of the amount of trade which is being transacted, and by comparison of successive years of its advance or decay; but they are still insufficient for enabling us to determine the balance of trade, or as it may be better stated, the actual amount of money or money's worth which is necessary for the settlement of the balances between the nation and its customers. And for this reason amongst others, that it is essential for uniformity's sake to lay down a rigid rule as to the time and place at which the valuation is taken, whilst under the actual conditions of trade the selling and the purchasing prices admit of continually changing adjustments. The goods which are sent abroad increase or decrease in value before they are used in payment for those we receive; these again are seldom placed upon the market at home at the same price as that at which they change hands abroad, and it is easy to perceive that the pound of value assigned to the import is not necessarily or often equivalent to the pound of export. For statistical purposes the value required is that which the articles bear at the time when the vessels in which they are conveyed arrive at, or depart, from the several ports in the kingdom; that is the sum of money which should be given in exchange for the bill of lading, which is the title for possession of the property. This includes the cost of bringing our imports hither but excludes that of conveying the exports to their destination, and thus leaves a considerable margin to be deducted from the one total or added to the other before the true difference can be ascertained. Again, in the official totals no account is taken of the coin and bullion which passes to and fro, and as regards the exports there are goods other than what is ordinarily termed merchandise, which need to be brought into the account, with other circumstances, to all of which a consideration in detail must be given.

To take the imports first. There is a large amount of specie and precious metal continually passing backwards and forwards between the various countries as a circulating medium, or in adjustment of the exchanges at the different monetary centres. The same coin or ingots may be, and are, transferred from one place to another very many times in the year, and though a separate account is kept of these removals, and much care is bestowed to make this as correct as possible, the value is not included in the totals of either the

imports or the exports. To add the whole would unduly swell both amounts, but the balance must clearly be placed to whichever side it belongs. This will consist of the floating stock which for the time being happens to be remaining in the country, together with such quantities as are absorbed in the arts and manufactures, or employed in the increase or renewal of the coinage.

It is a far more difficult task to ascertain what allowances should be made for the charges upon bringing the articles of import from the place of production or purchase, to that at which the value is assigned, but the extreme importance of obtaining a correct estimate has been made the occasion of a series of extended and minute calculations, by which it is hoped an approximation to the actual cost has at least been obtained; and as no mere statement of the results would carry conviction to the mind of those who are conversant with trade, it may be well to briefly describe the method which has been pursued. With cotton—the greatest of all our importations—as an example, quotations have been obtained of the actual amounts paid for freight from each of the principal ports in America, for the last twenty years; regard has been paid to the quantities shipped from each of these ports, and the periods of the year, whether in the slack or busy season, at which these have been made. An average has thus been arrived at for each year, and applying this to the average price per pound at which the cotton stands for the same year, the charge per cent. on the value has been ascertained. Similar processes have been gone through with corn, tea, sugar, wine, timber, &c., &c., to such an extent as to justify the conclusion that the declared import value is from this cause enhanced by $8\frac{1}{2}$ to $12\frac{1}{2}$ per cent. On a consideration of the whole it would seem that 11 per cent. is a fair average, and at this ratio the freight has been worked out for each year since 1854.

The validity of this estimate may be tested in another way. We have now from $4\frac{1}{2}$ to 5 million tons of British shipping employed in the foreign carrying trade; assuming 6*l.* per ton per annum as a fair estimate of gross earnings, of which one-fourth is chargeable to the export trade, we shall have say 22 millions; but perhaps one-third of the imported goods are brought in Foreign ships, and one-half of this sum must be added for the freight carried by these, giving thus a total of say 33 millions, not greatly below the 35 millions which has been assumed as the deduction for the present year. To corroborate these calculations, the ascertained import freight lists of several vessels for a series of years, actually give an average of 89*s.* per ton, which very nearly corresponds with four-fifths of the 6*l.* above assumed.

On the export side, all the alteration will be in the shape of additions. In the first place, we build many vessels for foreigners,

which, sailing away with cargoes, are not themselves deemed to be exports, but are just as much so as other goods taken from the country. Careful inquiries by an eminent ship building firm as to the average contract price per ton in each year for sailing vessels and steamers, have furnished a sum to be added on this account. Another item is that of victualling supplies and stores, which though never included in the exports, should be, inasmuch as they are so much goods sent away for profit in the shape of freight to be earned in both outward and homeward voyages. It has been estimated, from a comparison of actual outlays obtained from various firms, that these will amount to 20*s.* a ton per annum for sailing vessels, and 30*s.* for steamers, and at these rates the calculation has been made. A further addition must be made for the quantity of coals shipped for the use of steamers. No record of this was kept until within the last two years, but dividing these quantities by the tonnage of the vessels to which they were supplied, and assuming a similar rate of consumption for previous years, it is not difficult to find a value for each year according to the prices given for cargoes exported at the same times.

It has been necessary to specify at some length the various methods by which these estimates—for they are not positive facts—have been obtained, in order that those conversant with the various branches of business may form some ideas as to their probable accuracy. Conjectural amounts may not be very safe to rely upon, but these have all been very carefully made upon data collected from numerous authentic sources, and have been subjected to most exhaustive computations, involving a mass of figures and a large expenditure of time, in order that the result might be deemed to have real worth. The several details are displayed in the following table:—

TABLE III.—*Showing the Corrections of Excess of Imports (Table II) by Addition of Balance of Bullion and Deduction for Freight; and by Additions to Exports for Ships Built for Foreigners, Victualling, and Ships' Stores, and Coals for use of Steamers.*

[00,000's omitted.]

Years.	Apparent Excess of Imports.	Imports.		Exports.			Assumed Balance to be Provided for.
		Add — Bullion.	Deduct. — Freight.	Add — Ships for Foreigners.	Add — Victualling and Stores.	Add — Coals for Steamers.	
	£	£	£	£	£	£	£
1854.....	36,6	not ascertained	14,7	not recorded	2,8	,2	—
'55.....	26,9	,,	13,5	,9	3,1	,2	—
'56.....	33,3	,,	16,4	1,2	3,3	,2	—
'57.....	41,7	,,	18,0	1,2	3,3	,3	—
1858.....	24,8	9,9	15,5	1,0	3,4	,3	14,5
'59.....	23,5	— 5,6	16,9	,9	3,4	,3	— 3,6
1860.....	46,0	4,4	20,0	,5	3,2	,3	26,4
'61.....	57,9	— 2,1	20,1	,3	3,3	,3	31,8
'62.....	59,5	2,3	20,2	,7	3,5	,3	37,1
'63.....	52,0	3,5	21,8	,6	3,8	,4	28,9
'64.....	62,4	4,6	24,5	,9	4,2	,4	37,0
1865.....	52,2	6,4	24,0	1,1	4,4	,5	28,6
'66.....	56,4	12,6	27,0	1,2	4,4	,6	35,8
'67.....	49,4	9,5	25,3	1,1	4,6	,8	27,1
'68.....	66,9	4,6	27,1	1,4	4,6	,8	37,6
'69.....	58,4	4,1	27,3	,9	4,6	,8	28,9
1870.....	59,2	10,5	28,5	1,7	4,6	,9	34,0
'71.....	47,4	4,4	29,8	1,4	4,7	1,0	14,9
'72.....	40,1	— ,7	32,6	3,3	5,0	2,1	— 3,6
'73.....	60,3	4,7	34,7	4,0	5,2	2,6	18,5
'74.....	72,4	1,5	34,3	3,3	5,4	2,4	28,5
1875.....	92,3	5,6	34,7	1,8	5,3	1,9	54,2
'76*	119,0	8,0	35,0	—	—	2,0	83,0
19 years	1100,0	88,0	499,0	28,0	83,0	19,0	559,0
Average	58,0	5,0	26,0	1,5	5,0	1,0	30,0

* Partly estimated.

On the assumption, then, that the foregoing table has been correctly constructed from sufficiently accurate data, the figures in its final column should show the balances for each year since 1857, which England, in its trading relations with the whole world, has had to provide for or adjust. They are, in fact, the money values of the goods she has from time to time bought over and above those she has sold, and for them, in some shape or other, value has to be

given. Owing to various causes which affect the traffic of particular seasons, the years do not present such regularity as would justify a separate treatment. It will be best, therefore, to consider generally the average for the whole period, and then particularly the balances since 1872, when, as will be seen, a marked change commenced.

IV.—*Excess of Imports during the Past Twenty Years.*

Taking the official figures as shown in Table II, we shall find that during the last twenty years we have in round numbers:—

	£
Imported foreign and colonial merchandise to the value of	5,600,000,000
Exported " "	900,000,000
Retained in the country.....	4,700,000,000
Exported of British produce and manufacture	3,500,000,000
Leaving an excess of	1,200,000,000
Equal to an annual average of	60,000,000

But taking into account the additions and deductions set forth in Table III, this will be reduced to one-half, leaving the true average or balance to be dealt with not far from 30,000,000*l.*

Two things are quite evident: first, that the country cannot have suffered to this extent by any drain upon its stock of precious metals; for we have taken into account the ebb and flow of the coin and bullion, and with the additions to our circulating medium and the gold and silver absorbed in the arts and manufactures, there must be more of these with us than there ever was before; to say nothing of the present accumulation in the Bank coffers. Secondly, that we have not become debtors to other nations, for we have proof in the large loans they have contracted here and the heavy investments we have made abroad, that as capitalists we have increased rather than diminished our holdings. Nor is there any difficulty in seeing in what manner the settlement has been effected.

In the first place, the investments of which we speak produce an annual income which has either to be remitted here or placed to our credit with those from whom we purchase. Mr. Seyd, in a paper read before the Society of Arts in March last, estimates the indebtedness of other countries to this at from 1,000 to 1,100 millions of money, yielding an annual interest of from 40 to 50 millions. Professor Levi, in a paper published in the Society's *Journal* for June, 1874, thus quotes from a Parliamentary paper the sums assessed to the income tax as derived from foreign securities; Indian, 7,032,000*l.*; Colonial, 2,840,000*l.*; foreign, 9,341,000*l* · together, 19,213,000*l.* Since that year, notwithstanding that several

of our creditors have proved to be defaulters, the amount must have become much larger, and the exact sum not being important to the present question, it may serve to take the mean of the two estimates. This will be about 30,000,000*l.* at this time, but cannot have averaged more than one-half or two-thirds as much for the twenty years.

We have next to take into account the drawings by the Government here on its Indian revenues, amounting to some 15 millions per annum. This also has been growing or has been almost entirely created since 1854, and cannot therefore have gone very far in the past, although it is a most important item at the present, and will probably be still more so in the future.

Possibly these two sources of income have furnished nearly if not quite enough to pay for the excess of imports, and if so, the adjustment is complete. But further than this, we have the profits of trading in the goods which go to form the large amount of imports and exports, together making a total of 10,000 millions for the twenty years, or an average of 500 millions, which should have yielded a profit of some 20 to 30 millions per annum.

Another item in favour of this country will arise from the earnings of her ships in the transport of goods to, and between, foreign ports, the net proceeds of which having to be remitted to the owners, will form a set-off against the goods purchased abroad for importation at home. Any estimate of its amount must be very doubtful, and may range from 5 to 10 millions annually, subject, however, to a deduction of such portion of both it and the home freights as are payable to colonial shipowners. The freight on imports being settled at home cannot in any way enter into the account.

In addition to all these, there must be a large return for trade carried on abroad by our countrymen, who remit the profits here to be spent or invested in this country, and there are also the entirely unknown proceeds from capital invested in private manufacturing and agricultural pursuits by those who remaining at home expend the income here.

From these facts, we may safely draw the conclusion that the surplus value of the imports must until recently have been far from sufficient to meet all the claims this country has upon others; and that the difference, whatever it may be, must have remained abroad, swelling the indebtedness of other nations to us, increasing the English capital employed in foreign undertakings.

In itself, therefore, there is no reason why either the excess of past years, the greater surplus of the present, or the still larger sums we may conceive of for the future, should be deemed prejudicial to our interests, or likely to derange the finances of our

country. As was remarked in a former paper which slightly touched upon these points, "manufactures might flourish and "prosperity exist without a single article of export ever being "made." We do not take it as indicative of poverty in London, nay, rather as a proof of its wealth, that the articles it receives so greatly exceed those it parts with. We might even point out whole districts which abounding in every token of wealth and luxury, are nothing but recipients, and why? Because there are congregated in these quarters those who draw thither the returns which labour, skill, and capital combine to produce at the different seats of our national industry. Let us look upon England as the metropolis of the world, the residence of those whose capital flows to every land, whose skill directs the employment of that capital in combination with the labour of emigrants from her own shores, still more of the workers she finds ready to her hands almost wherever she turns her thoughts; and she may go on receiving without payment those imports which thus serve to support her own population, and purchase all the products of their industry. Let the increase of our capital abroad, and the openings found for its profitable employment, only keep pace with, or exceed, the increase of numbers, wants, or desires at home, and there will ultimately be true reason to measure the prosperity of the nation by the amounts it can afford to receive without the necessity for sending anything away. But if, on the other hand, investments abroad lessen in productiveness, our manufacturers cease to sell on profitable terms, and our consumption at home require increasing foreign supplies, we shall by degrees be eating up the wealth accumulated in the past, and the rapidity with which our imports increase will then be the measure of our national decay.

V.—*Preponderance of Imports in Recent Years.*

In 1872 the true excess would seem to have been on the side of exports rather than imports, to the extent of nearly 4,000,000*l.*, but in the following year the imports again predominated, and have continued to do so with increasing weight up to the present moment. The figures by which this is shown demanding particular investigation, another table has been prepared in which both imports and exports are separated into three classes. This division is necessarily rather a rough one, so many articles not belonging decisively to either class. Again, there are many substances not strictly food, which are yet entirely consumed in supplying our inner wants or inclinations, and leave nothing remaining but the bodily power they support, beyond that which, as unfortunately too often happens, they impair or destroy. The broad distinction between that which enters the mouth, and that which employs the hands, has decided

whether each article should be classed as one of food, or a material for manufacture. Wine, spirits, tobacco, have all thus been deemed food, as well as wheat, meat, or sugar. Manufactured articles, and those which admit of no particular classification, form the third head under imports. With the exports it has been attempted to distinguish between those originating in foreign materials from such as are of home produce alone, and however imperfectly this distinction may have been capable of maintenance, it is equally correct or incorrect for the different years, and may thus serve as a guide for comparison. There are some features in these figures which shed great light upon the main subject of this paper, namely, the growing increase of our imports and decrease of our exports.

TABLE IV.—*Classified Imports and Exports for the Years* 1854 *to* 1876, *Distinguishing Articles for Food from the Imports of Raw Materials for Manufacture and other Articles, and the Exports of British Manufactures Produced from Foreign Materials, and those of Home Growth.*

[000,000's omitted.]

Years.	Imports.				Real Excess of Imports.	Exports.			
	Total Retained for Home Consumption.	Articles for Food.	Raw Materials for Manufacture.	Other Articles.		Manufactured from British Materials.	Manufactured from Foreign Materials.	Articles of Food.	Total British Produce and Manufactures.
	£	£	£	£	£	£	£	£	£
1854....	*134,*	59,	61,	14,	—	27,	66,	4,	*97,*
'55....	*123,*	52,	57,	14,	—	25,	65,	6,	*96,*
'56....	*149,*	62,	72,	15,	—	31,	78,	7,	*116,*
'57....	*164,*	64,	82,	18,	—	35,	81,	6,	*122,*
'58....	*141,*	57,	68,	16,	*15,*	30,	81,	5,	*116,*
'59....	*154,*	56,	84,	14,	*−3,*	33,	91,	6,	*130,*
1860....	*182,*	80,	85,	17,	*26,*	34,	97,	5,	*136,*
'61....	*183,*	82,	79,	22,	*32,*	31,	88,	6,	*125,*
'62....	*183,*	89,	71,	23,	*37,*	33,	86,	5,	*124,*
'63....	*199,*	79,	94,	26,	*29,*	37,	104,	6,	*147,*
'64....	*223,*	79,	119,	25,	*37,*	37,	118,	5,	*160,*
'65....	*218,*	78,	112,	28,	*29,*	38,	123,	5,	*166,*
'66....	*245,*	91,	126,	28,	*36,*	42,	141,	6,	*189,*
'67....	*230,*	101,	100,	29,	*27,*	42,	134,	5,	*181,*
'68....	*247,*	105,	110,	32,	*38,*	42,	133,	5,	*180,*
'69....	*248,*	106,	108,	34,	*29,*	50,	135,	5,	*190,*
1870....	*259,*	100,	119,	40,	*34,*	53,	139,	7,	*199,*
'71....	*271,*	118,	117,	36,	*15,*	58,	155,	10,	*223,*
'72....	*296,*	136,	125,	35,	*−4,*	76,	173,	7,	*256,*
'73....	*315,*	147,	133,	35,	*19,*	85,	161,	9,	*255,*
'74....	*312,*	143,	130,	39,	*29,*	78,	154,	8,	*240,*
'75....	*316,*	157,	118,	41,	*54,*	67,	149,	7,	*223,*
'76*	*319,*	159,	119,	41,	*83,*	57,	138,	7,	*200,*

* Partly estimated.

It may be observed in the first place, that articles for food which in 1854 were imported to a rather less value than those for manufacture, are now vastly in excess. In 1871 they were nearly equal to each other; by 1875 the one had increased from 118 to 157, the other scarcely at all. In the present year it is believed the disproportion will be greater. The total amounts of both are less than they would be but for the low prices which have prevailed, a cause, however, which has certainly not affected materials more than food. The conclusion that we are buying more food and selling fewer manufactured goods tallies with the diminution of our exports.

Again, it may be noticed that the exports of manufactures from foreign materials, which in 1854 only exceeded the value of the materials imported by 8 per cent. (66 to 61), were last year 18 per cent. in excess (149 to 118), seeming to comport with what we know of the increasing cost of labour.

These two circumstances—the growing expenditure for food, and the increasing cost of manufactures—cannot both arise from the prevalence of low prices, nor are they likely to be remedied by any revival of trade to which present indications point. If food become dearer it will not cheapen the manufactures we sell, and if at present prices we are being undersold by foreign producers, it is scarcely probable that a general rise in values will at all check the rapid growth of excess in our imports. To recur to the net balances which have to be adjusted; we find that they are larger than they have ever been before, that they are increasing in an accelerated ratio, and that our export trade furnishes no indication of being able to alter their amount, any more than our import does of their being reduced. Further that all this occurs conjointly with default in remittances for dividends on foreign loans, and that on all sides we hear that this extended import and diminished export trade is unaccompanied by the usual rate of profits.

Unless, therefore, some radical change take place in the conditions of our trade and manufacture, or the system upon which they are conducted, these unfavourable symptoms will every year become more painfully apparent.

VI.—*Concluding Remarks.*

What, then, are the requisite changes? How may the growing evils indicated by the figures we have before us be checked or averted? These are questions for the political economist rather than the statistical inquirer. If, however, the investigation we have been pursuing has at all served to make clear facts of importance as regards our natural position as a manufacturing and trading community, I crave your indulgence for the utterance of a few thoughts which have arisen during its progress.

The gravity of the situation lies in the fact that whilst we are every year becoming more dependent upon foreign supplies for the support of our population, the products of its industry are becoming less necessary to the countries from which those supplies are drawn. Whilst fancied security in our ability to defy competition, and a knowledge of the large profits hitherto accruing to our manufacturers, have induced our artisans and labourers to grow more exacting in their demands, and their masters to be more lavish in their expenditure, other nations have been profiting by our experience, and rival manufactories have been springing up on all sides. Whilst we have been appropriating a large portion of our earnings to the increase of our productive powers, other nations have been calling forth and utilising their natural advantages; so that for a time at least supply has overtaken demand, and competition has lowered prices to such an extent as to render a large recovery very doubtful. Whilst we have been freely lending our money to other nations, thereby enabling them to pay for their purchases from us, more than one of those deeply in our debt have been repudiating or neglecting their pecuniary obligations to us, and so acting that it seems uncertain whether national expenditure may not be forced upon us for their maintenance, or repression, as the case may be. Is it, then, for us to sit down in inactivity or despair? Such has not been the Anglo-Saxon character hitherto; such will not be the conduct of Anglo-Saxons now. If we have been running riot in the "seven ears full and good," and are about to suffer from the "seven thin ears blasted with the east wind," we may learn such lessons from adversity as to lay the foundation of a higher state of prosperity than any we have yet attained to.

Our labourers must learn that if trade is to be maintained the cost of production must be limited. To this end wages will have to fall, but if so, the cost of living will fall also, and if not there is no need for them to earn less, for temperance and economy of time will enable them to produce more. It is said that we spend annually 150 millions in intoxicating drinks, as much as all our food imports cost us. At least one-half of this might be easily saved by the lower classes for better employment, and the country would be spared the expenditure of an enormous sum in the maintenance of poor-houses, hospitals, police, and gaols.

Our capitalists, and those who live upon them, need to restrain the heavy expenditure accompanying the cravings of ambition, the undue pursuit of pleasure and frivolous idleness. They will seek to invest their money in places where new industries are to be established, and new markets to be found, whilst a large number of those whose brains are their only capital, must cease from the wild speculation by which so many strive to live; seeking to make

their fortunes not by honest industry, but by being sharper than their neighbours, thus, in truth, enhancing the cost to the consumer of all that passes through their hands.

Our rulers, now that the days of heavier taxation are looming before us, may well endeavour to reduce the costly expenditure of preparation for war, and devote more attention to extending our peaceful influence upon, and intercourse with, the countries which want but this to become valuable customers and faithful friends.

But are we not all labourers, capitalists, rulers? and as such are not these lessons for ourselves? The food we eat, the water we drink, the air we inspire, are but so many constituents in creating and maintaining the physical power and the nervous energy which must be expended in labour of some sort, or they become inert; are there not abundant fields for their employment, as so many have already found, in new countries, or old ones capable of being renewed?

Are we not all capitalists? The knowledge we have imbibed, the experience we have inherited or acquired, the brain power we possess, are but so much capital capable of profitable investment, especially when accompanied with, or supported by, the money capital, of which there is no lack for promising uses.

Again, are we not all rulers? The liberty for self-government, the parental, conjugal, and social relationships in which we stand, are so many powers to be wisely employed in ruling ourselves and others, for our own and their advantage, which need but to be so devoted for the economising of our present means, and the production of material additions to our varied resources.

I firmly believe that Britain now stands tottering on the eminence to which she has attained, and that it rests entirely with her sons whether a further rise or a rapid fall is to mark her future history. It may be said that no nation has hitherto stayed in its upward progress without suffering a speedy descent. Other nations have possessed wealth, science, art, but none have ever combined with these the higher gifts which we enjoy. Let these but be consecrated to the advancement of civilisation and Christianity throughout the world, and I, for one, have no fear for our lasting prosperity or enduring glory. Say not these are but the visions of an enthusiast, such enthusiasm has had its share in making us what we are, it may yet play an important part in the salvation of our country, and the regeneration of the world.

Discussion *on the* Foregoing Papers.

Mr. Walford said it seemed to him that Professor Levi's paper stated in a very pleasant form that free trade was a success and not a failure. The value of the paper consisted in the fact that it would be circulated in other countries and teach the lesson of free trade to them. He referred more particularly to the United States, whose protectionist policy had been forced upon them by the circumstances to which the Professor had referred; and who would be forced off it as soon as the circumstances would admit, and as soon as the knowledge was communicated to it such as had been given in the paper, which throughout contained facts worthy of the Statistical Society. Turning to Mr. Bourne's paper, the chart accompanying it was one of the most instructive that had ever been prepared. In reference to the export columns, any one who was familiar with commerce would see that difficulties presented themselves which would require further elucidation. It was well known that the years that showed the largest exports had produced, not success, but disaster. What had happened? The exports had been made unprofitably: they had been much too large for the requirements: and those very years were the causes of the disaster which is marked on the following lines. It was clear that no table, showing imports as against exports, could give the true index of the wealth of a country, and nothing could make that more certain than the chart which had been exhibited. One of the ways in which the gap was filled up was, as given by the author, the receiving by this country of the amount of money from interest on foreign loans. It was the same with a nation as with a person. If a person spent more than his income he could not continue long to do so; and if a nation really spent more than its income it would very soon stop payment, as in the case of Turkey. There was something to be added to the chart, able and clever as it was, to give a solution of the state in which the country stood. There was one consideration in reference to the interest from foreign loans. The million received for every million of exports shown was not really profit; there was probably 10 per cent. profit upon it: but the million of interest obtained from a foreign country was, in a national sense, a million of profit, and therefore the one million of interest coming in from the loans that had been made was equivalent to 10 millions of exports to other countries. This was a point which would have to be remembered; and when the table was worked out in that sense, namely, the interest received on foreign loans taken in regard to the cash interest as a net payment in reference to the 10 per cent. on the exports, a solution of the question brought forward by Mr. Bourne would very nearly be arrived at.

Professor Jevons thought that Professor Levi's paper was well

calculated to show the actual results of the treaties that had been made, and those results were so satisfactory and plain that the paper did not call for much criticism. With respect to Mr. Bourne's paper, he concurred in the statement that it was full of thought and meaning. He should, however, have liked to have a little more details as to the manner in which some of the estimates had been made, but he thought that the values as given might be accepted, seeing they were estimated by a careful and skilful statistician. First of all, exports and imports should not be looked upon as a matter of profit and loss. The exports must, in the end, pay for what was received as imports. The inquiry to be made was, what made one amount greater or less than the other. This would indirectly lead to suspicion as to the error in estimating the quantities—which was quite possible; or else it would lead to the supposition that there were some amounts left out of account altogether. In reference to this point, he was sorry to see that Mr. Bourne did not seem to be acquainted with the work of the late Professor Cairnes on "Some Leading Principles of Political Economy Newly Expounded." That volume contained a complete investigation into the question of the balance of exports and imports.* In most points he believed that Mr. Bourne's figures quite corroborated Professor Cairnes' theoretical argument. Curiously enough he thought that Professor Cairnes actually gave the precise explanation which was needed to make plain the diagram connected with the paper, and with which he was much pleased both from an artistic and a useful point of view. The main point was to ascertain why, in 1872, there was a minus quantity in the diagram, and why, since that, there had been such a very great improvement in the imports as compared with the exports. He believed that Professor Cairnes' explanation in reference to this was that the balance in question would greatly depend upon the amounts of capital which were being invested abroad, as compared with the dividends on them which had to be paid to this country. Mr. Bourne had given a careful account of the amount of income coming from abroad; but he had not said much, if anything, about the reverse process of the investments abroad, which was equivalent to leaving out of the account the original debt, and only looking to repayment. Professor Cairnes showed that in periods when there was no investing abroad there would be a natural recurring income of imports to pay dividends. Looking at the last few years, there was nothing more marked in the course of trade and public discussions than the discredit attaching to a great many countries abroad; and since 1872 there had been an immense decrease in the investments of the English abroad, although, as a general rule, the dividends had been paid. He apprehended that this sudden cessation of investments abroad was the most important cause, although he was far from saying the only one, of the difference referred to, so that the explanation of Professor Cairnes was therefore entirely corroborated on that point. He was sorry to see that another point so strongly brought out by Professor Cairnes had also been overlooked. He

* See part iii, chap. iii.

referred to that part of the paper where the author stated as a final conclusion, that if wages in this country did not fall, the country would totter. He hoped this was a very mistaken conclusion. He drew special attention to the fact that Professor Cairnes had unequivocally and entirely disproved the old idea that high wages meant high cost of production. He (Professor Jevons) did not say that in particular cases high wages might not have a very bad effect, especially as in the case of the extraordinary rise in the price of coal, which had tended very much to induce a subsequent decline in trade. He begged to call attention specially to this question of wages, which had been argued out in the most conclusive way by Professor Cairnes.

The Rev. Isaac Doxsey referring to the question of food and luxury, that had been dealt with by Mr. Bourne, called attention to a paper published by Mr. Hoyle, one of the members of the Society, in which he showed that the large reverse which had taken place with regard to the manufacturing interests of the country had been much more due to the diminution of our home trade than to the falling off of the exports to other countries. Light, however, would be thrown upon this question if Mr. Bourne would give the items of food and luxury which he had classified under one head separated from one another, because if, on further investigation it was found (which he thought would be the case) that the increase which had been referred to was due much more to articles of luxury than to articles of food, particularly in the increase of the use of tobacco and spirits, he thought it would be seen that the purchasing powers of the masses of the people were being, to a very considerable extent, interfered with, and therefore there was a falling off in the quantities of manufactured articles used and enjoyed by the whole population. He felt indebted, as he was sure others present would be, to Professor Levi and Mr. Bourne for the excellent papers they had read. They were valuable, not only as showing the facts which had already been arrived at, but as pointing out, in a most clear and succinct way, the direction in which further inquiry must be made for the purpose of getting at the real truth in regard to this matter. There was another important question urging itself on men of thought in the present day more than the position in which we stand in relation to other countries. There was a very general impression, whether right or wrong, that this country was to a certain extent losing in the race in which it had been wont in past years to win: and this was a time when such questions should be thoroughly, searchingly, and impartially investigated; and he was sure that Mr. Bourne's paper would materially assist in the further investigation of this question, upon which the future well-being of the country so largely depended.

Mr. Glover, after expressing his personal indebtedness to the authors of the papers, said he felt that the indications which Professor Levi's paper afforded as to the general activity of trade throughout the world, were the best guarantee to ourselves as a

nation of traders that, notwithstanding a good many utterances to the contrary, we need not indulge in the rather gloomy visions which were pourtrayed in the latter part of Mr. Bourne's paper, which, as a whole, was well worthy the attention of the Society. There was one question, however, that should be asked, namely, whether the statistics given by Mr. Bourne of export and import were of a sufficiently reliable character to bear the treatment to which they had been exposed in a comparison of this sort. It would be remembered that some six or eight years ago a sub-committee of the Society was appointed to examine the Board of Trade and Navigation Returns, in order to see to what extent they were reliable or could be improved. The impression which he then held as a member of the committee, and which he had seen no reason to change since, was that these returns of value were very uncertain and unreliable, particularly the returns of exports, which were made frequently by junior clerks at the Custom House, who knew very little about them. Then when he was told that there was such an enormous deficiency in our exports compared with our imports, and that consequently we had to pay out so much money to make up for that deficiency, and that, as a nation, we were getting into a very bad way, he could not help turning with comfort to facts that were well known to all. Instead of the nation being impoverished, all the figures tended to show that the nation had been going on under a gradual process of enrichment until within the last two or three years; and in regard to the question of paying so much money for the excess of exports over imports, he would ask Mr. Bourne to explain the most remarkable circumstance of the extreme cheapness of money at the present time. His own opinion was that the tables were exceedingly unreliable. He would ask, also, whether another error did not underlie the idea of the author as to the balance of trade. Our imports and exports related only to our foreign trade, which was only a branch of the whole of the trade that was carried on: and when conclusions were drawn between the particular balance of two sides of the foreign account, a mistake was very apt to be made unless the enormous home trade carried on by the thirty-two millions of people in this country was taken into consideration. It seemed to him that the excess of imports over exports might admit of another construction than that put upon it by Mr. Bourne. Might not the larger value from abroad indicate the degree of our national ability to put foreign nations into indebtedness beyond our ability to make them take our goods in payment? When our exports were very small we could not afford large imports; now it was quite different. The indebtedness of other States to us enabled us to a certain extent to disregard the mere question of the amount of goods we were able to sell. He looked at our English trade from a very simple point of view, and it was this: England was a magnificent estate, the like of which had never yet been; and he did not think that the proprietors of such an estate, within which there was so much for their own comfort and enjoyment, should trouble themselves so much about the balance that resulted from their foreign transactions. The gravest part of Mr. Bourne's paper

related to the food question, but the gravity of the question did not lie so much in a mere matter of money. It lay in another direction. When it was borne in mind that there were 32,000,000 of population in this country, and that nearly two-thirds of their food had to be brought from abroad, that raised many questions about the supply of food, which were so important that they could not be exaggerated; but there was not the slightest doubt as to the country's ability to pay for its requirements of food. He combated the idea that this country was showing signs of old age and decay: he would be willing to enter into a comparison between this country and the youngest country, and to show that any tests of national vigour to be found elsewhere could be more than paralleled in England.

Mr. T. R. Arnott said that as an old council member of the Liverpool Chamber of Commerce, he was interested in the discussion, and he felt that the one paper was the complement of the other. With regard to the Northern States of America and the question of free trade, there was a large free trade party growing up in New York, one of the members of which had said, "When we come to free trade we will sweep away our custom houses;" and he thought the time was not so far distant when this would take place. In reference to the wages question, he could not help, as an employer of labour, agreeing with one of the speakers that it was a very important one. If the working man was intelligent and industrious and frugal, the wealth and energy accruing to the benefit of the country would be untold; but he was sorry to say that the most skilled labourer in this country was generally the most improvident, and was growing to be the most intemperate, and did not work more than four-and-a-half or five days a-week. He thought that steps should be taken to remedy this state of things, and thus make the industrial classes the backbone and support to the future prosperity of the country. Passing on to Mr. Bourne's paper, he was struck with a number of remarks that had been made upon it, particularly one as to the balance of trade. He thought, as a merchant, the old idea in reference to this was a good deal exploded. A large amount of the unproductive exports during the last two years had been sent to countries, like India, that did not at all progress in the ratio that merchants had expected. If the desire for some comforts and a little luxury was increased in the inhabitants of those countries, then there would be a large export trade. With regard to the question of opening up new countries, the men who were passing away from the present generation were those who had opened up the countries from Cape Horn to California; and the development in Japan, Africa, and other countries seemed to be at a stand still. He reprobated the want of energy in this respect on the part of the young men of the present day. He was satisfied that if there was not more enterprise shown, we must, as a nation, decay.

Professor Levi in thanking the various speakers for their favourable criticism of his paper took occasion to observe, in regard

to Mr. Bourne's paper, that he seemed to have omitted a very important item in his account. Although the values of the exports were less, the quantities were as great as ever. It must also be taken into account that the amount of income tax from year to year showed an enormous increase. It would also be found that the revenue continued to be kept up, all showing that there was no danger of relapse in the resources of the country. He thought that the balance of trade, as shown by the figures, really indicated that the country was prospering more and more. He begged to join in the recognition of the indebtedness of the other speakers to Mr. Bourne for his very valuable paper, and especially for his excellent tables and diagrams, which were a somewhat novel feature in the Society, and he hoped the Council would take steps to have them published.

Mr. Bourne in reply said that the reason he did not give the details of the estimates asked for by Professor Jevons was because they would unduly swell the paper. He was very much indebted to a brother of Professor Jevons for some elaborate calculations with regard to cotton. In regard to exports, he quite concurred in the remark that they would pay in the end for all we could import; but his point was this: that the rapid change which had taken place indicated a period of coming adversity. No doubt nations had been rendered largely indebted to us, but if we continued to draw from them more than we sent to them, their indebtedness to us would be diminished, and consequently also the income which would enable us to pay for our imports from them. He quite concurred in the statement that the years of extensive export had been years of unproductive trade; but we had been considered prosperous at home because the manufacturers were kept in employ, whilst the capitalists of the country had been losers by their unprofitable investments. But his argument was this, that if the manufactures ceased to be sent abroad, the manufacturers, as well as the labourers employed by them, must suffer. He did not profess to be a profound political economist: but he brought forward his figures to aid as much as possible in the investigation of the subject, being ready to admit that there might have been flaws in his argument. With reference to the question raised as to the distinction between food and luxuries, he would forbear entering into it then, since he had promised to read a paper to the Statistical Society of Manchester on the same subject, which would then be fully elaborated. With regard to the gloomy anticipations taken notice of by Mr. Glover, he thought it would be seen from the paper that he looked upon this state of things as only temporary; that the present difficulties had only to be recognised in order to have them remedied, and to place the country in a higher state of excellence than that to which it had hitherto attained. With regard to the unreliable nature of the returns spoken of by Mr. Glover, if they were unreliable, the fault lay with those who had failed to furnish the compilers with correct information; but still, in the main, he believed they were to be relied upon for the purpose for which they were intended. If he were asked to give an opinion, he would say that

probably the exports were more likely to be correct than the imports. Professor Levi had spoken about values and quantities: but he (Mr. Bourne) reminded him that the question was one of value, and he purposely left out quantities, because he did not think they would affect the argument in any way. The fact that more calico was being sent for less money did not seem to him to affect the question at all: the point under discussion was as to the money value which passed between this country and the rest of the world. The manufactured article had not, as far as he could see, fallen in price in proportion to the raw material from which it was produced, and that went to support the argument that the cost of production had increased, which he attributed, not wrongly, to the high rate of wages. He could not agree with Professor Levi that the income tax was increasing. Although it was now 3*d.* in the pound, it had not up to this time yielded so much as it did at 2*d.* last year. No doubt a large amount of that falling due in the current year was assessed at 2*d.*, but if the incomes this year were equal to those of last year, there should not have been any diminution in the tax received, rather a slight increase. With regard to the revenue generally, the customs and the excise revenue had kept up, no doubt owing to what he conceived to be a great evil, the large consumption of spirits and tobacco. Had time permitted, he would have entered into more detail. He begged to thank the various speakers for the way in which his paper had been received.

Some Statistics *of the* Affiliated Orders *of* Friendly Societies (Odd Fellows *and* Foresters). *By* Francis G. P. Neison, Esq., F.S.S., *&c.; Barrister-at-Law, Lincoln's Inn.*

[Read before the Statistical Society, 16th January, 1877.]

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Under the term "Friendly Society," organisations of widely different constitutions are embraced, but the present paper proposes dealing only with that section of these institutions designated "affiliated orders," or an aggregation of distinct branches united together by some common bond. The paper, I would observe, will be one of essentially a statistical character, and questions of the finance and constitution of the orders will not be further alluded

to than any explanation of the figures given in the tables renders requisite. The legal and financial status of these societies are at the present time questions of the utmost public interest, but credit could not be done this evening to these points if they were embraced in the present inquiry.

Part I.

A few remarks on the nature and government of these organisations will be necessary to render clear some of the statistics that will subsequently be given. The constitution of the Orders of Odd Fellows and Foresters is simple, and yet efficient. Each order is entirely self-governed, and consists of numerous branches termed "lodges" or "courts," and "districts," with a central executive over all. The primary branches, designated "lodges" in the Odd Fellows, and "courts" in the Foresters, represent to all intents and purposes so many local friendly societies distributed over the world, the members of which attend to and pay their own sick out of their own funds. By a combination of the branches most important advantages are obtained as relates to the mortality risks and general management. What are termed "districts" are formed, their object being by the uniting together of a number of the branches to spread the death risks over a greater number of members with a view to the better security of the individual lodges or courts. The district representative body, which generally meets quarterly, is composed of delegates from the branches, and though its principal duty is to apportion equitably the funeral risks, other matters concerning the welfare of the branches are discussed and decided, all resolutions arrived at being binding on the courts or lodges. In the Odd Fellows the central executive, permanently fixed at Manchester, consists of a board of directors elected yearly by the suffrage of the deputies at the annual meeting of the society; the directors meet quarterly, and any subject affecting the order as a whole comes within their cognisance. In the Foresters the executive council, which is located each year in a different town, is elected from the members of the locality in which the next annual gathering takes place. The council meets weekly, watches over the interests of the society as a whole, and, as in the Odd Fellows, is responsible only to the annual meeting for its action. In both societies the executive have the sole power of authorising the establishment of branches, issue quarterly a report to each lodge or court recording all their transactions, and at the same time affording such information as may be of use to the branches individually, and publish and sell all goods relating to the order. The annual gathering, which in the Odd Fellows is termed the annual movable committee (so designated as it cannot take place in the

same town two consecutive years), commences always on Whit Monday, in the Foresters is called the high court, begins on the first Monday in August, and lasts in each case a week, and is held in some town previously fixed for that purpose. Practically this is a system of annual parliaments, the members of which are elected by the suffrages of the branches composing the order. As the sending of deputies is optional, the attendance varies in accordance with the nature of the principal subjects for discussion. At the meeting in Edinburgh last year of the Foresters, the delegates present were 507 in number, and 361 attended the Odd Fellows gathering at Ryde (Isle of Wight) in the same year. The powers of the meeting are absolute, and it is the only body enabled to effect any alteration in the general rules and working of the society. Though all sections of the order are governed by the general rules, districts may make additional ones if consistent with these, and courts or lodges possess the same privilege so long as their rules conform to the district regulations. A detailed account of the meeting is given in the next quarterly report of the executive, which report must be publicly read in each branch, so that thus every member of the order is made acquainted with whatever business has been transacted at this undoubtedly the most important period in the society's annual career. Throughout both orders all disputes are settled by arbitration. The system of "clearances, travelling cards," &c., will be explained when the statistics regarding them are given. The efficiency of the organisation of these orders is well displayed in the matter of returns. The secretary of each lodge or court makes out carefully all the particulars of his own branch required by the schedule, and forwards the same to the district secretary. This officer then examines the return of each of these subordinate branches, sees that it is properly filled up, tests as far as possible its accuracy, and then compiles a tabulation of the whole, and forwards it to the secretary of the executive, who summarises from these condensed returns all information likely to be either instructive or interesting to the members.

The general type of the affiliated society is fairly set out in the foregoing description, but in some of the smaller orders* there are

* The affiliated societies are about seventy-five in number, but some of the orders are numerically very weak, indeed not more than forty have a constituency exceeding 1,000 members. After the Manchester Unity of Odd Fellows and the Ancient Order of Foresters, the largest organisations are—

	Number of Members about
Grand United Order of Odd Fellows (20,000 abroad)	95,000
Order of Druids	65,000
Ashton Unity of Ancient Shepherds	50,000
National Order of Odd Fellows	45,000
Nottingham Ancient Imperial Order of Odd Fellows	40,000

important variations, and, whilst in some the organisation of districts does not exist, in others the funds for certain benefits are common to the whole society. It will be, therefore, understood that the preceding account of an affiliated order is only strictly applicable to the Manchester Unity of Odd Fellows and the Ancient Order of Foresters.

You will very properly wish to know the source from which the facts in this paper have been collated, and I would mention, therefore, that they have been compiled, with the greatest regard to accuracy, from the quarterly reports and other documents issued by the societies within the last thirty years. All the figures in these documents* have, as far as possible, been most carefully checked, and in many instances tested from an independent source.

It will render the statistics easier to follow, if, at any rate for the principal tables, the two orders are dealt with separately. If any comparisons are requisite, a summary of the facts can be given. As being numerically slightly the larger order of the two, the Manchester Unity of Odd Fellows will be taken first.

Part II.

In the year 1832 the Manchester Unity of Odd Fellows consisted of eighty-two districts, embracing 561 lodges, with an aggregate of 31,042 members. The numerical strength of the order from that date very rapidly increased, until on the 1st January, 1846,† the members in the society were 259,374 in number. Prior to the year 1848 it was a matter of great difficulty to satisfactorily ascertain even the number of members in the order, but in that year a new system was inaugurated, and particulars published in the quarterly reports as to the number of members, initiations, deaths, secessions, &c. This practice has been most admirably kept up, and from a tabulation of the records, I am enabled to show in the following table what has been the numerical development of the society since the year 1848:—

and then follow the Bolton Unity of Odd Fellows, United Order of Druids, the True Ivorites, Sons of Temperance, Rechabites, &c., &c., and then others of still smaller dimensions, but of more arrogant titles, as "The Order of the Knights of "Malta," "The Order of the Golden Fleece," "The Most Noble Order of the Ark," "The Order of the Peaceful Dove," "The Order of Romans," with a variety in the shape of the "Ancient Order of Buffaloes."

* I would here record the obligations I am under to the secretaries, both of the orders and their branches, for forwarding to me for years past the reports and other documents issued by the societies.

† I find that from the 1st March, 1840, to 1st March, 1841, no less than 41,198 persons appear to have joined the society. This number of initiations is far in excess of that attained in any subsequent year.

TABLE A.—*The Progress of the Manchester Unity of Odd Fellows since the Year* 1848.

Year.	Number of Members on the 1st January.	Initiations during the Year.	Left the Society.		Number of Deaths.	
			Singly.	By Causes Accounted for.	Members.	Members' Wives.
1848	249,261	10,645	13,666	9,370	2,380	1,763*
'49	234,490	9,732	11,783	4,754	2,807	2,179
'50	224,878	10,335†	— ‡	3,501	2,189	1,809
'51	229,975	10,217§	8,668	4,208	2,451	1,816
'52	225,194	10,613	5,581	3,220	2,565	1,943
1853	224,441	16,618	3,188	2,915	2,728	1,985
'54	232,228	18,836	6,876	921	2,768	2,037
'55	240,499	21,319	7,244	842	2,724	2,070
'56	251,008	23,546	7,986	924	2,811	1,918
'57	262,833	22,624	4,315	1,811	3,077	2,115
1858	276,254	24,907	9,583	709	3,296	2,374
'59	287,573	27,856	5,848	1,092	3,275	2,384
'60	305,214	26,841	10,943	1,263	3,634	2,549
'61	316,215	25,509	2,246	602	3,731	2,639
'62	335,145	24,276	12,511	105	3,852	2,724
1863	342,953	26,900‖	9,784	1,258	3,996	2,780
'64	358,556	28,458	9,306	950	4,560	2,997
'65	373,509	29,744	10,621	519	4,831	2,967
'66	387,990	31,462	12,162	1,424	5,058	3,411
'67	405,255	29,235	13,581	2,188	4,978	3,171
1868	417,422	27,873	14,374	1,284	5,153	3,094
'69	425,095	28,379	14,910	1,010	5,384	3,189
'70	434,100	28,939	14,167	1,861	5,467	3,337
'71	442,575	30,683	12,397	1,346	5,933	3,489
'72	458,159	34,699	13,142	2,336	6,171	3,464
1873	470,043	33,893	10,356	7,010	6,097	3,538
'74	481,630	31,771	11,578	1,615	6,413	3,773
'75	496,529	32,650	15,026	1,834	6,916	4,195
'76	508,013	—	—	—	—	—

* As no record of the number of wives dying in this year could be found in the quarterly reports, this number has been approximated.

† In addition, seven lodges, containing 452 members, were readmitted.

‡ From a different method of returning the number of members at the end of the year being now adopted, I cannot ascertain the number that left of their individual accord in this year.

§ In addition, five lodges, containing 329 members, were readmitted.

‖ Nett increase in the colonies, from which returns not complete—

During the Year	Members.	During the Year	Members.
1863	3,741	1870	1,031
'64	1,311	'71	4,57[illegible]
'65	708	'72 nett decrease	1,166
'66	4,447	'73 ,, increase	1,157
'67	3,679	'74	2,734
'68	611	'75	2,610
'69	1,903		

At the end of 1845 serious dissensions arose in the order, and so great was the distrust engendered that though the initiations were at the rate of over 10,000 per annum, the secessions far outnumbered them, and thus the numerical strength of the society decreased, until on the 1st January, 1853, the minimum of 224,441 members was attained. From a financial point of view this large decrease at that period in the numerical force of the unity was not without very material advantage to the society, inasmuch as the rates of contribution in use prior to the Annual Moveable Committee of Preston in 1853 were very far from being adequate for the benefits promised. The decrease of members thus operated advantageously in the financial interests of the order. Since 1853 the members each year have increased in number, and on the 1st January, 1876, the order consisted of 457 districts, 4,073 lodges, and 508,013 members, dispersed in various parts of the world.

It will be observed that in the year 1853 a very sudden rise occurs in the members joining the society, the number in 1852 being only 10,613 as against 16,618 in the subsequent year. This is to be attributed to a new scale of initiation fees that was adopted in 1853, and though it was in force but a short period of that year, its popularity was attested by the initiations rising so much above the average of former years. Under the title of "left the society," the members in the table are distributed under two heads, viz., "singly" and "by causes accounted for." The distinction is that under the first head those members only are included whose connection with the society was broken by an individual action of their own, that is to say, non-payment of their subscription, whilst the heading "by "causes accounted for" embraces those whose connection with the order was terminated by the corporate action of the branch as a whole. In a subsequent table, dealing with the lodges that have ceased to exist, the matter will be more fully entered into, and the precise cause of the members leaving the order shown. This is a very important point, for the proportion of persons whose connection with a benefit society has been dissolved by causes otherwise than their own individual action is much overrated in the public mind, and thus unjust obloquy cast upon these associations.

The results in the preceding table are summarised in the following abstract, wherein the facts are presented for quinquennial periods, and the increase per cent. in the numerical strength of the Unity shown. In the five years following 1848 the number of members decreased about one-tenth, whilst in each of the three subsequent quinquenniums the numerical strength of the society was augmented, on an average, 23 per cent. In more recent years the rate of increase has declined.

The Manchester Unity of Odd Fellows.

Year.	Number of Members on the 1st January.	Initiations (5 Years).	Nett Increase in Colonies (5 Years).	Members Died (5 Years).	Left the Society (5 Years).	Increase per Cent. in the Numerical Strength of the Unity.
1848.....	249,261					
		51,542*	—	12,392	64,751	9·957 (decrease)
'53.....	224,441					
		102,943	—	14,108	37,022	23·085
'58.....	276,254					
		129,389	—	17,788	44,902	24·145
'63.....	342,953					
		145,799	13,886	23,423	61,793	21·714
'68.....	417,422					
		150,573	6,983	28,108	76,827	12·606
'73.....	470,043					
1848–73 (25 yrs.)	—	580,246	20,869	95,819	285,295	—
		98,314	6,501	19,426	47,419	8·078
1876.....	508,013					

* Members in twelve lodges readmitted 781.

The development of the order from the year 1848 may be finally viewed in the following condensed summary:—

Number of members on 1st January, 1848	249,261	Lodges closed	19,997
		,, seceded	16,812
Initiations	678,560	,, suspended	21,226
		,, expelled	2,837
Increase in colonies, &c.	27,370	Deaths	115,245
		Voluntary resignations	271,842
Readmitted	781	Number of members on 1st January, 1876	508,013
Total	955,972	Total	955,972

This balance sheet, as it may be termed, affords a very good idea of the important extent of this organisation of the working classes. As might be expected, the item "voluntary resignations" is high, but those well acquainted with friendly societies are aware that the percentage of members allowing their membership to lapse through non-payment of contribution is always large, especially among the younger members.

The rates per cent. of initiation, mortality, and secession for the whole order can be computed from the figures already exhibited, and are as follows:—

Years.	Initiations.	Mortality.	Secession.
1848–52	4·476	1·076	5·624
'53–57	8·322	1·141	2·993
'58–62	8·328	1·145	2·890
'63–67	7·651	1·229	3·243
'68–72	6·833	1·275	3·486
'73–75	6·701	1·324	3·232

It should be borne in mind, in viewing the above rates, that they are to some slight extent understated, as instead of the actual facts for some of the colonies, &c., as to the initiations, deaths, and secessions, only the nett increase in the number of members has been returned. The error, however, is of no great magnitude, and would only affect the rates from 1863. In 1866, of the total members in the society, under 5 per cent. were abroad, and at the present date even the proportion is but 8 per cent.

Hitherto the unity as a whole has been regarded. I now propose dealing only with those members resident in the United Kingdom. As already stated, from the beginning of the year 1848 various facts as to the initiations, deaths, &c., in the society have been published in the quarterly reports, but it was not until 1863 that these particulars were given in such a form that the details for England, Ireland, Wales, and Scotland could be separately ascertained. In the next table, therefore, is shown the development in the United Kingdom of the Manchester Unity of Odd Fellows from the year 1863:—

TABLE B.—*The Progress in the United Kingdom since the Year* 1863 *of the Manchester Unity of Odd Fellows.*

Year.	Number of Members 1st January.	Initiations.	Left the Society.	Number of Deaths.		Sum Paid on Death of					
				Members.	Wives.	Members.			Wives.		
						£	*s.*	*d.*	£	*s.*	*d.*
1863	329,608	26,900	11,148	3,996	2,780	38,803	16	–	16,315	17	–
'64	341,364	28,458	10,247	4,560	2,997	44,919	5	–	18,193	9	–
'65	355,015	29,744	11,121	4,831	2,967	46,255	6	–	18,178	2	–
'66	368,807	31,462	13,486	5,058	3,411	49,652	10	–	20,249	6	–
'67	381,725	29,235	15,516	4,978	3,171	48,976	15	2	19,100	5	–
1868	390,466	27,873	15,458	5,153	3,094	50,851	15	6½	18,215	4	–
'69	397,728	28,379	15,588	5,384	3,189	53,204	16	–	19,322	15	–
'70	405,135	28,939	15,746	5,467	3,337	54,274	17	–	20,141	16	–
'71	412,861	30,683	13,743	5,933	3,489	58,513	5	–	21,132	13	–
'72	423,868	34,699	15,478	6,171	3,464	61,642	8	–	20,776	5	–
1873	436,918	33,893	17,366	6,097	3,538	60,999	16	–	21,355	17	–
'74	447,348	31,771	13,193	6,413	3,773	64,516	11	–	22,357	3	–
'75	459,513	32,650	16,860	6,916	4,195	70,108	7	–	24,756	9	–
'76	468,387	—	—	—	—	—			—		

Grouping the facts together for periods of five years, the following analysis results :—

Year.	Members, 1st January.	Initiations.	Deaths.	Left the Society.	Increase per Cent. in Strength of Order.
1863.....	329,608				
		145,799	23,423	61,518	18·464
'68.....	390,466				
		150,573	28,108	76,013	11·896
'73.....	436,918				
		98,314	19,426	47,419	7·202
'76.....	468,387				
	—	394,686	70,957	184,950	—

Of the 184,950 members who left the order, as shown above, the cause was—

Lodges closed	2,391
„ seceded	6,830
„ suspended	14,274
„ expelled	1,140
Voluntary resignations	160,315
Total	184,950

The rates per cent. of initiation, mortality, and secession in the United Kingdom during the periods under review were :—

Years.	Initiations.	Mortality.	Secession.
1863–67	8·069	1·296	3·405
'68–72	7·333	1·369	3·702
'73–75	7·232	1·429	3·488

Some idea can be gathered of the number of married men among the members, from a comparison of the proportion of the deaths of wives to the deaths of members :—

Years.	Ratio of Wives' Deaths to the Deaths of Members.	Average Sum Paid at Death of	
		Member.	Wife.
		£ s. d.	£ s. d.
1863–67	0·654	9 15 3	6 – 1
'68–72	0·590	9 18 2	6 – 2
'73–75	0·592	10 6 1	5 19 –

Thus on an average 7*l.* are paid on the death of a member and 6*l.* on the death of a wife.

The next table (Table C), which is of a most comprehensive character, involved an immense amount of labour in its preparation. Particulars are given of the number of members, initiations, deaths, and secessions for the years 1863-67, 1868-72, and 1873-75, in

(*a*) Every county in England;
(*b*) Divisions of England, the counties being grouped together according to the arrangement adopted in the census, &c.;
(*c*) England, Wales, Ireland, Scotland, and the Channel Islands, each separately;
(*d*) And finally, for the United Kingdom as a whole.

The county in every case is determined by the locality of the majority of the branches in the district, and though undoubtedly the districts sometimes extend into more than one county, yet roughly speaking, the vast majority of the members will be located in the county to which the district is allotted, and as the same geographical distribution is kept to each year, the error is as much as possible minimised. The loss from members leaving the order is sometimes underrated in the table, from branches excluded in previous years for non-compliance with the unity laws being subsequently reinstated after complying with the regulations. This would not affect the number of initiations, but by increasing the number of members returned at the expiration of the year, would reduce the apparent loss from members leaving. As no record of the reinstatements can be gathered, the exact extent of this error cannot be determined; it would not practically, however, much affect the accuracy of the figures given in the table under the head of "left the society," inasmuch, as will be perceived from a subsequent table, the number of branches at any one time under "suspension" is not very great.

It was thought preferable to attempt some geographical classification of the counties than to merely arrange them in their alphabetical order. The classification adopted by the General Register Office for the returns of births, deaths, and marriages in England and Wales, which is similar to the distribution of the counties maintained in the census reports, was considered the most fitting. Inquiry is often made as to the proportion of the population of this country that makes any provision against illness and distress, and the table that follows will enable a rough approximation to be arrived at for various sections of the United Kingdom. If to these results be added the facts in Table G, the particulars for no less than 7,456 societies will be presented, that is about one-third of the total numbers of friendly societies in this country.

TABLE C.—*The Manchester Unity of Odd Fellows.*

Counties.	1863-67. Number of Members, 1st January, 1863.	Initiations.	Deaths.	Left the Society.	Number of Members, 1st January, 1868.
South-Eastern—					
Kent	6,210	4,473	328	2,054	8,301
Surrey	2,807	2,518	166	752	4,407
Sussex	6,132	3,368	324	1,470	7,706
Hants	3,892	3,285	262	960	5,955
Berks	2,593	2,501	158	892	4,044
	21,634	16,145	1,238	6,128	30,413
South Midland—					
Middlesex	17,845	12,897	1,171	5,987	23,584
Herts	1,435	779	67	161	1,986
Bucks	1,065	419	70	102	1,312
Oxford	887	799	48	277	1,361
Northampton	3,841	1,066	175	302	4,430
Huntingdon	274	132	18	34	354
Bedford	2,216	851	128	477	2,462
Cambridge	2,632	1,527	165	430	3,564
	30,195	18,470	1,842	7,770	39,053
Eastern—					
Essex	1,138	538	65	267	1,344
Suffolk	4,849	1,914	211	810	5,742
Norfolk	10,698	4,951	549	2,512	12,588
	16,685	7,403	825	3,589	19,674
South-Western—					
Wilts	2,150	2,035	142	585	3,458
Dorset	2,402	1,997	103	1,034	3,262
Devon	4,386	4,040	269	1,435	6,722
Cornwall	907	1,038	44	418	1,483
Somerset	1,406	781	96	274	1,817
	11,251	9,891	654	3,746	16,742
West Midland—					
Monmouth	5,474	2,738	324	1,214	6,674
Gloucester	4,787	2,734	270	1,349	5,902
Hereford	1 503	558	77	322	1,662
Salop	7,618	3,220	445	911	9,482
Stafford	10,290	5,090	685	2,095	12,600
Worcester	3,358	1,296	222	890	3,542
Warwick	9,298	4,181	634	1,929	10,916
	42,328	19,817	2,657	8,710	50,778

Progress in the United Kingdom since 1st January, 1863.

1868-72.				1873-75.			
Initiations.	Deaths.	Left the Society.	Number of Members, 1st January, 1873.	Initiations.	Deaths.	Left the Society.	Number of Members, 1st January, 1876.
3,744	428	2,190	9,427	2,841	281	1,419	10,568
2,599	231	1,216	5,559	1,682	170	904	6,167
2,249	388	1,542	8,025	1,084	264	1,632	7,213
4,450	384	1,883	8,138	2,936	282	1,092	9,700
2,471	190	1,136	5,189	1,593	152	789	5,841
15,513	1,621	7,967	36,338	10,136	1,149	5,836	39,489
11,091	1,473	7,820	25,382	6,514	1,047	3,995	26,854
1,122	107	181	2,820	643	66	217	3,180
511	75	192	1,556	300	54	104	1,698
913	78	278	1,918	821	65	329	2,345
1,472	255	442	5,205	1,091	230	193	5,873
71	21	58	346	24	12	12	346
995	167	458	2,832	728	96	254	3,210
1,427	189	509	4,293	759	140	399	4,513
17,602	2,365	9,938	44,352	10,880	1,710	5,503	48,019
522	65	173	1,628	477	64	178	1,863
2,374	324	707	7,085	1,628	221	581	7,911
5,145	650	2,691	14,392	3,386	454	2,032	15,292
8,041	1,039	3,571	23,105	5,491	739	2,791	25,066
2,568	198	703	5,125	1,305	168	684	5,578
1,968	161	1,428	4,483	1,669	112	660	5,380
3,524	356	1,334	7,714	1,895	213	974	8,422
913	83	424	1,889	761	59	274	2,317
751	131	384	2,053	486	100	253	2,186
9,724	929	4,273	21,264	6,116	652	2,845	23,883
4,397	456	1,513	9,102	2,801	339	1,455	10,109
3,124	350	1,565	7,111	1,890	289	914	7,798
618	97	263	1,920	559	67	263	2,149
3,641	515	1,916	10,692	2,013	399	952	11,354
4,645	886	2,504	13,855	3,370	640	1,392	15,193
1,779	240	687	4,394	1,088	213	472	4,797
3,898	762	1,970	12,082	2,365	555	1,113	12,779
22,102	3,306	10,418	59,156	14,086	2,502	6,561	64,179

TABLE C.—*The Manchester Unity of Odd Fellows. Progress*

Counties.	1863-67. Number of Members, 1st January, 1863.	Initiations.	Deaths.	Left the Society.	Number of Members, 1st January, 1868.
North Midland—					
Leicester	6,294	2,659	354	872	7,727
Rutland	126	93	15	11	193
Lincoln	6,851	3,130	359	1,168	8,454
Notts	6,457	2,117	404	1,008	7,162
Derby	13,078	3,776	874	1,061	14,919
	32,806	11,775	2,006	4,120	38,455
North-Western—					
Chester	12,201	4,553	986	1,891	13,877
Lancaster	60,420	15,299	5,471	8,965	61,283
	72,621	19,852	6,457	10,856	75,160
Yorkshire—					
York	52,054	15,519	4,222	6,227	57,124
Northern—					
Durham	9,233	5,203	610	2,097	11,729
Northumberland	3,104	2,675	227	642	4,910
Cumberland	4,897	1,785	328	983	5,371
Westmoreland	2,784	633	163	534	2,720
	20,018	10,296	1,328	4,256	24,730
England	299,592	129,168	21,229	55,402	352,129
Wales	23,491	11,837	1,691	3,931	29,706
Ireland	1,002	1,003	86	674	1,245
Scotland	3,939	2,720	302	1,253	5,104
Channel Islands	1,584	1,071	115	258	2,282
Total	329,608	145,799	23,423	61,518	390,466

* The actual loss in this county from members leaving the society cannot be ascer-
1874. This would not affect the initiations, but by increasing the number of members
leaving.

in the United Kingdom since 1st January, 1863—Contd.

1868-72.				1873-75.			
Initiations.	Deaths.	Left the Society.	Number of Members, 1st January, 1873.	Initiations.	Deaths.	Left the Society.	Number of Members, 1st January, 1876.
2,784	494	1,140	8,877	1,683	359	632	9,569
124	9	38	270	107	8	35	334
2,560	463	1,413	9,138	1,495	332	919	9,382
1,855	502	1,143	7,372	1,127	326	652	7,521
4,141	1,062	2,539	15,459	2,658	763	—*	17,382
11,464	2,530	6,273	41,116	7,070	1,788	2,210	44,188
4,745	1,191	2,268	15,163	2,817	751	1,585	15,644
14,469	5,989	8,790	60,973	8,971	3,879	4,234	61,831
19,214	7,180	11,058	76,136	11,788	4,630	5,819	77,475
15,173	4,658	8,627	59,012	9,544	3,080	6,095	59,381
5,383	817	2,739	13,556	3,613	506	1,419	15,244
1,878	325	1,148	5,315	1,131	242	590	5,614
2,121	378	621	6,493	1,626	285	603	7,231
746	193	450	2,823	382	122	177	2,906
10,128	1,713	4,958	28,187	6,752	1,155	2,789	30,995
128,961	25,341	67,083	388,666	81,863	17,405	40,449	412,675
14,154	2,100	6,628	35,132	10,544	1,496	4,223	39,957
600	74	705	1,066	394	60	329	1,071
5,714	444	1,185	9,189	4,568	336	2,182	11,239
1,144	149	412	2,865	945	129	236	3,445
150,573	28,108	76,013	436,918	98,314	19,426	47,419	468,387

tained, from a number of branches that had been previously suspended being reinstated in returned at the expiration of the year, would reduce the apparent loss from members

The development of the order in various sections of the United Kingdom can be easily traced in Table C. Whilst Odd Fellowship does not appear to make much headway in Ireland, in Wales it is progressing rapidly, and in Scotland has nearly trebled its members since 1863. In England the greatest relative increment in the number of members appears in the South-Western division, the least in the North-Western. If instead of the increase per cent. the largest actual addition to the numerical strength is regarded, this will be found in the West Midland counties, the least in the North-Western. Turning to the counties themselves, whilst the members have remained stationary in Lancashire, in Oxfordshire and Cornwall they have been increased nearly threefold.

The table is of much interest as enabling many valuable comparisons to be made between one county and any other, or with the order in the United Kingdom as a whole. Rates of initiation, mortality, and secession can also be deduced, as the mean of the members living at the beginning and end of the quinquennium will fairly represent the years of risk. In connection with the rates of mortality and secession, Table J should be consulted, as age has an important bearing on these points. The ratio of secessions to initiations will repay investigation, as some of the counties present curious results on the subject.

Numerous inaccurate statements have from time to time appeared as to the number of Odd Fellows' lodges that have from one cause or another come to grief. In most instances the average duration of the branches has been much underrated. That misapprehensions on the subject should exist is perhaps to no slight extent accounted for by the difficulty of anyone outside the societies obtaining accurate information. However, the facts have been most carefully investigated, and the number of lodges that have ceased to exist is the subject of the next table. The facts are given from the year 1848, and are recorded under the heads of "closed," "seceded," "suspended," "expelled," and "amalgamated." Under "closed" are classed all those branches that have ceased to exist from a "division of their funds," "want of funds," "want of members," &c. For the few years following 1848, when the faith of the members in the stability of the order was so strongly shaken, the branches that divided their funds, and also those that seceded from the unity, were very numerous. Of the lodges that have seceded, some subsequently divided their funds, others formed isolated friendly societies, whilst others again founded new affiliated orders. The suspensions occur mainly for neglect in making the returns called for by the executive, but any breach of the general laws lays a branch open to it. For a gross violation of the unity regulations the lodge is expelled.

TABLE D.—*The Manchester Unity of Odd Fellows. Lodges Ceased to Exist.*

Year.	Closed.		Seceded.		Suspended.		Expelled.		Amalgamated.	
	Lodges.	Members.	Lodges.	Members.	Lodges.	Members.	Lodges.	Members.	Lodges.	Members.
1848	138	5,562	31	1,710	27	1,586	6	512	—	—
'49	69	2,372	24	1,637	18	591	3	154	24	483
'50	73	1,809	32	1,641	—	—	1	51	30	—
'51	40	1,422	23	1,637	18	1,012	4	137	36	—
'52	37	1,447	11	537	11	1,011	4	225	16	—
1853	41	1,428	11	689	11	654	2	144	21	421
'54	15	539	—	—	8	336	1	46	20	—
'55	22	517	7	286	—	—	2	39	19	—
'56	9	123	3	65	8	587	2	149	5	105
'57	18	416	9	899	8	452	2	44	3	—
1858	14	620	—	—	2	55	1	34	5	57
'59	17	474	7	397	2	154	3	67	5	85
'60	17	399	5	484	4	335	2	45	4	—
'61	12	373	—	—	3	179	1	50	14	270
'62	8	105	—	—	—	—	—	—	10	141
1863	19	354	—	—	10	904	—	—	20	392
'64	6	91	5	361	7	498	—	—	9	161
'65	10	299	—	—	4	220	—	—	19	460
'66	11	129	10	705	3	128	4	462	7	358
'67	5	89	15	1,653	6	368	4	78	18	521
1868	11	224	5	239	6	821	—	—	10	200
'69	11	238	2	50	12	722	—	—	11	179
'70	6	83	7	804	10	849	2	125	10	132
'71	7	428	8	586	2	264	1	68	18	465
'72	6	112	11	862	17	1,362	—	—	15	539
1873	8	167	5	574	64	6,175	2	94	11	287
'74	6	55	7	533	8	873	1	154	9	174
'75	10	122	6	463	7	1,090	1	159	12	318

The results exhibited in the table are condensed in the following abstract.

Years.	Closed.		Seceded.		Suspended.		Expelled.		Amalgamated Lodges.
	Lodges.	Members.	Lodges.	Members.	Lodges.	Members.	Lodges.	Members.	
1848–52....	357	12,612	121	7,162	74	4,200	18	1,079	106
'53–57....	105	3,023	30	1,939	35	2,029	9	422	68
'58–62....	68	1,971	12	881	11	723	7	196	38
'63–67....	51	962	30	2,719	30	2,118	8	540	73
'68–72....	41	1,085	33	2,541	47	4,018	3	193	64
'73–75....	24	344	18	1,570	79	8,138	4	407	32
	646	19,997	244	16,812	276	21,226	49	2,837	381

It thus appears that since 1848

	646	lodges with	19,997	members have closed.
	244	„	16,812	„ seceded.
	276	„	21,226	„ been suspended.
	49	„	2,837	„ „ expelled.
Total	1,215		60,872	

Besides these 1,215 lodges, 381 weak branches have amalgamated. Undoubtedly many of the lodges that have closed were opened in thinly populated places, and thus not enabled to obtain sufficient members to place them in good working condition. How few the members were in many of the branches that have ceased to exist, a perusal of the table will exhibit. Thus the lodges returned as amalgamating, is in every respect a good feature, as consolidating and strengthening the unity. I have not been enabled to ascertain how many of the lodges "suspended" subsequently renewed their connection with the order by complying with the general laws, but undoubtedly some have done so.

In 1863, in consequence of some statements that had recently appeared as to the average duration of Odd Fellow lodges, the executive of the order caused a careful inquiry to be made as to the existence of the first 100 lodges opened in the society. It was found that only 12 of these branches had ceased to belong to the order, some having closed, others seceded. The average duration at that period of the existing lodges was a little over forty-three years. Taking into account the 12 branches that had ceased to belong to the order would only reduce the average to forty years.

From an inquiry made in 1866 it appeared that by May, 1832, 598 lodges had been opened in the order; that of these 37 had then closed, and that during a period of thirty-three and a half years, viz., from May, 1832, to January, 1866, 87 lodges out of the 561 then existing had closed, and 36 seceded.

It is from the practice of one or more branches seceding and setting up new affiliated orders, in which the special ground of complaint with the parent society that has brought about the secession shall be avoided, that there arises so much similarity in the nomenclature of the affiliated societies, there being not less than 25 orders of Odd Fellows and 4 of Foresters. The numerical strength of many of these societies is under 1,000 members.

In connection with the question of branches that have ceased to exist, it should be observed that if, when a lodge is compelled to close for want of funds, or breaks up and divides its funds, or is suspended or expelled for not strictly conforming with the decrees

of the proper constituted authorities of the order, it can be shown that any individual member not only took no part in such proceedings, but did his best to counteract them, his membership in the order is not forfeited, but he may become what is designated a unity member. The practical effect of this is to turn the central executive into a lodge for these members, such paying their contributions thereto and withdrawing their benefits therefrom, if necessary a levy being made annually on the *whole* order for the provision of the latter. The amount that may be levied in this manner is however restricted, not being allowed to exceed a given limit per member. This proviso merits particular attention, as it is from an ignorance of it that the fallacy is prevalent that the whole order collectively is responsible for the capacity to perform its promises of each individual branch. That every branch should be merely responsible for the liabilities it individually insures is clearly the only correct principle for all practical purposes; each section should be so constituted as to be prepared to stand or fall by its own merits, otherwise there would be no incentive to judicious management and the careful supervision that some of the risks, sickness especially, call for. Those branches who had been neglectful and unthrifty themselves would reap the results of the real prudence and thrift of others.

Part III.

On the 1st January, 1846, the Ancient Order of Foresters consisted of 161 districts, 1,614 courts, and 76,990 members. It has gone on year by year increasing the number of its branches and members until, on the 1st January, 1876, it had 275 districts, 4,323 courts, and 491,196 members.

Though a continuous record has been kept of the number of members in the order, until 1855 I can find no particulars of the initiations, deaths, &c., and none, I believe, were ever tabulated. In that year, for the first time, were these facts exhibited in the quarterly reports of the society, and the practice was maintained for six years, when from some unexplained cause it ceased, and a blank of five years occurs, after which an end very properly was put to this state of things, and for the future a complete record kept of the members, their initiations, deaths, secessions, &c. That this blank should occur is much to be regretted, as it destroys the continuity of the results presented in the table, but my efforts to obtain the requisite facts have not met with success.

The progress of the order since the year 1846 is displayed in the accompanying table:—

TABLE E.—*The Progress of the Ancient Order of Foresters since the Year* 1846.

Year.	Number of Members.	Initiations during the Year.	Members Reinstated.	Left the Society.		Number of Deaths.		Number of Honorary Members.
				Singly.	By Causes Accounted for.	Members.	Wives.	
1st Jan. 1846.....	76,990	—	—	—	—	—	—	—
„ '47.....	83,493	—	—	—	—	—	—	—
„ '48.....	84,472	—	—	—	—	—	—	—
„ '49.....	80,490	—	—	—	—	—	—	—
„ '50.....	80,089	—	—	—	—	—	—	—
1st Jan. 1851.....	84,348	—	—	—	—	—	—	—
„ '52.....	89,875	—	—	—	—	—	—	—
„ '53.....	94,323	—	—	—	—	—	—	1,090
„ '54.....	100,556	—	—	—	—	—	—	1,028
„ '55.....	105,753	14,053	—	4,517	267	1,270	1,008	1,224
1st Jan. 1856.....	113,752	17,746	1,572	5,728	623	1,296	1,018	1,404
„ '57.....	125,423	17,517	—	6,085	454	1,400	1,055	1,526
„ '58.....	135,001	21,020	—	5,496	491	1,472	1,124	1,607
„ '59.....	148,562	28,039	—	5,806	602	1,617	1,240	2,016
„ '60.....	168,576	30,129	—	6,069	1,282	1,770	1,337	2,459
1st Jan. 1861.....	189,584	—	—	—	—	—	—	2,895
„ '62.....	207,933	—	—	—	—	—	—	3,671
„ '63*	228,026	—	—	—	—	—	—	4,149
1st Dec. '63.....	250,703	—	—	—	—	—	—	4,829
„ '64.....	277,746	—	—	—	—	—	—	5,203
1st Dec. 1865.....	301,077	41,442‡	724	17,015	2,722	3,238	2,247	5,886
„ '66.....	321,253	38,652	1,307	20,052	1,824	3,206	2,195	6,050
„ '67.....	336,791	36,268	555	20,079	1,883	3,333	2,317	6,529
„ '68.....	349,022	38,459	788	20,352	3,246	3,530	2,383	7,148
„ '69.....	361,735	39,859	1,400	21,789	2,099	3,816	2,484	7,464
1st Dec. 1870.....	376,663	42,673	889	19,122	2,111	4,099	2,976	7,671
„ '71.....	396,244	48,160	1,814	18,999	2,973	4,531	2,752	8,157
„ '72.....	421,988	49,905	1,070	20,397	4,559	4,421	2,864	8,770
„ '73.....	446,888	47,901	1,230	21,763	3,547	4,666	3,220	9,442
„ '74†	468,495	51,203	1,920	23,477	2,478	5,658	3,594	10,013
1st Jan. 1876.....	491,196	—	—	—	—	—	—	10,521

* From an alteration of the date to which the returns are made, this year embraces eleven months only.

† From an alteration of the date to which the returns are made, this year embraces thirteen months.

‡ Net increase in the colonies and foreign countries—

Year.	Members.	Year.	Members.
1866	985	1871	1,351
'67	661	'72	2,273
'68	703	'73	3,302
'69	594	'74	2,452
'70	1,373	'75	1,191

In addition to the other particulars in the table, the number of honorary members in the society is shown, and also the members each year "reinstated." As to this latter expression a branch violating the rules of the order is finally placed under "suspen-
" sion," and the members thereof would thus appear in the column "left the society," under the head of "by causes accounted for;" if, however, within a specific period the branch as a body thinks fit to comply with the regulations of the society, its members are readmitted into the order, and thus the origin of the term.

The following abstract is a summary of the preceding table:—

The Ancient Order of Foresters.

Year.	Number of Members.	Initiations (5 Years).	Members Reinstated (5 Years).	Net Increase in Colonies, &c. (5 Years).	Members Died (5 Years).	Left the Society (5 Years).	Increase per Cent. in the Numerical Strength of the Order.
1846....	76,990						
		—	—	—	—	—	9·557
'51....	84,348						
		—	—	—	—	—	34·861
'56....	113,752						
		114,451	1,572	—	7,555	32,636	66·666
'61....	189,584						
		—	—	—	—	—	58·674
'66....	301,077						
		194,680	4,774	4,316	17,123	111,061	25·105
'71....	376,663						
		239,842	6,923	10,569	23,375	119,426	30·407
'75....	491,196						

Striking a balance sheet for the last ten years it appears that the—

Number of members, 1st December, 1866	301,077	Courts closed	2,536
Initiations	434,522	„ seceded	1,154
Increase in colonies, &c.	14,885	„ suspended	23,437
Reinstated	11,697	„ expelled	315
		Deaths	40,498
		Voluntary resignations	203,045
		Number of members, 1st January, 1876	491,196
Total	762,181	Total	762,181

The rates per cent. of initiation, mortality, and secession in the whole order for the years for which these particulars can be determined, are:—

Years.	Initiations.	Mortality.	Secessions.
1856–60	15·695	1·036	4·475
'66–70	11·400	1·003	6·503
'71–75	11·065	1·078	5·510

With reference to these figures it should be remembered that, as in the results for the Odd Fellows, so here also are the percentages for the whole order understated to the extent that the returns for the colonies, &c., are not complete. The error is but slight in amount, as under 5 per cent. of the members were abroad in 1866, and at present not quite 6 per cent.

Not until the year 1866 is it possible to trace from the quarterly reports of the society the development of the Ancient Order of Foresters in the United Kingdom by itself, and consequently in the next table the facts proceed from that date.

TABLE F.—*The Progress in the United Kingdom, since* 1866, *of the Ancient Order of Foresters.*

Year.	Number of Members on 1st December of the Year preceding.	Initiations.	Members Reinstated.	Left the Society.	Deaths.	
					Members.	Wives.
1866.....	287,246	41,442	724	19,737	3,238	2,247
'67.....	306,437	38,652	1,307	21,876	3,206	2,195
'68.....	321,314	36,268	555	21,962	3,333	2,317
'69.....	332,842	38,459	788	23,598	3,530	2,383
'70.....	344,961	39,859	1,400	23,888	3,816	2,484
1871.....	358,516	42,673	889	21,233	4,099	2,976
'72.....	376,746	48,160	1,814	21,972	4,531	2,752
'73.....	400,217	49,905	1,070	24,956	4,421	2,864
'74.....	421,815	47,901	1,230	25,310	4,666	3,220
'75.....	440,970	51,203	1,920	25,955	5,658	3,594
1876..... (1st Jan.)	462,480	—	—	—	—	—

The table may be summarised thus—

	Members.	Initiations.	Reinstated.	Deaths.	Left the Society.	Increase per Cent. in Strength of Order.
1st Dec. 1865.....	287,246					
		194,680	4,774	17,123	111,061	24·811
„ '70.....	358,516					
		239,842	6,923	23,375	119,426	28·977
1st Jan. '76.....	462,480					
Total	—	434,522	11,697	40,498	230,487	—

Of the 230,487 who left the society, 203,045 ceased membership from non-payment of contribution, and the remainder from the closing, secession, &c., of branches. In a subsequent table, displaying the number of courts that have from one cause or another ceased to exist, the particulars for these latter members will be found.

The proportion of married members in the order, so far as this can be determined by the deaths of wives, to the deaths of members, was :—

Years.	Ratio of Wives' Deaths to the Deaths of Members.
1866–70	0·679
'71–75	0·659

The ratios in the Odd Fellows were 0·654 for 1863-67, 0·590 for 1868-72, and 0·592 for 1873-75. For the whole male population in England and Wales, aged 20 and upwards, the percentage of husbands in 1871 was 66·1 per cent.; in 1861 it was 65·5 per cent.

An interesting table was given in a former portion of this paper displaying the development of the Manchester Unity of Odd Fellows in England, and its counties and divisions, Wales, Ireland, Scotland, &c. Information in precisely the same form could not be obtained for the Foresters, but instead is exhibited the number of courts and members in the order for each of the respective divisions and sub-divisions of the United Kingdom. The facts are given for intervals of five years, and date from as far back as 1848, in lieu of 1863, as shown in the Odd Fellows' table.

Though the numbers of initiations, deaths, &c., in the Foresters in England and Wales were not recorded from year to year for the various counties until 1866 (*vide* Table F), yet for very many years a record appears to have been kept of the total number of branches in each county and the number of members therein, so that to this extent the progress of the order in various sections of the United Kingdom can be traced for a long series of years.

TABLE G.—*The Ancient Order of Foresters. Progress*

County.	1st January, 1848.		1st January, 1853.		1st January, 1858.	
	Number of Courts.	Number of Members.	Number of Courts.	Number of Members.	Number of Courts.	Number of Members.
South-Eastern—						
Kent	10	491	13	845	16	1,308
Surrey	22	685	30	1,208	30	1,924
Sussex	7	215	13	656	23	1,112
Hants	18	926	42	2,796	43	3,934
Berks	1	21	3	117	2	112
	58	2,338	101	5,622	114	8,390
South Midland—						
Middlesex	198	7,873	162	9,097	234	18,966
Herts	1	25	—	—	1	71
Bucks	13	539	11	766	14	934
Oxford	—	—	—	—	1	32
Northampton	29	1,156	29	1,278	38	2,158
Huntingdon	3	70	3	120	4	335
Bedford	14	392	13	540	13	705
Cambridge	4	164	3	116	3	129
	262	10,219	221	11,917	308	23,330
Eastern—						
Essex	—	—	—	—	—	—
Suffolk	1	29	4	487	19	1,941
Norfolk	30	1,287	41	1,886	58	3,646
	31	1,316	45	2,373	77	5,587
South-Western—						
Wilts	20	574	9	381	9	699
Dorset	3	107	—	—	—	—
Devon	—	—	—	—	—	—
Cornwall	—	—	—	—	—	—
Somerset	6	105	8	187	13	639
	29	786	17	568	22	1,338
West Midland						
Monmouth	9	311	10	383	24	1,390
Gloucester	18	531	23	979	38	2,672
Hereford	—	—	—	—	—	—
Salop	17	989	26	1,466	32	2,330
Stafford	39	2,350	54	3,158	61	4,095
Worcester	—	—	2	55	10	406
Warwick	44	1,431	40	1,692	42	2,009
	127	5,612	155	7,733	207	12,902
North Midland—						
Leicester	6	153	5	128	6	211
Rutland	3	109	2	81	2	79
Lincoln	140	7,032	121	6,107	109	7,644
Notts	17	592	14	596	25	1,441
Derby	26	845	21	897	30	1,612
	192	8,731	163	7,809	172	10,987

in the United Kingdom since 1st January, 1848.

1st January, 1863.		1st December, 1867.		1st December, 1872.		1st January, 1876.		County
Number of Courts.	Number of Members.	Number of Courts.	Number of Members.	Number of Courts.	Number of Members.	Number of Courts.	Number of Members.	
								South Eastern—
58	5,074	91	10,663	102	12,585	111	15,628	Kent
64	5,229	80	7,508	79	9,101	78	9,683	Surrey
42	3,177	60	5,127	68	7,168	73	8,761	Sussex
66	6,266	92	10,251	104	12,880	112	15,808	Hants
4	285	6	529	7	670	7	750	Berks
234	20,031	329	34,078	360	42,404	381	50,630	
								South Midland—
428	41,218	571	65,228	629	80,716	641	89,160	Middlesex
1	96	3	297	4	497	7	606	Herts
16	1,489	22	2,574	26	3,307	28	3,953	Bucks
2	196	3	335	7	644	4	565	Oxford
49	3,460	59	4,988	57	6,685	60	7,779	Northampton
5	423	5	496	5	516	5	646	Huntingdon
21	1,620	28	2,814	32	3,504	41	4,721	Bedford
6	411	9	664	9	908	11	1,155	Cambridge
528	48,913	700	77,396	769	96,777	797	108,585	
								Eastern—
—	—	5	711	5	990	8	1,167	Essex
34	3,237	40	4,424	51	6,121	55	7,443	Suffolk
94	6,652	98	9,207	105	12,071	106	14,038	Norfolk
128	9,889	143	14,342	161	19,182	169	22,648	
								South-Western—
12	1,075	17	1,591	27	2,867	31	3,860	Wilts
—	—	10	560	9	825	11	1,064	Dorset
68	4,214	99	8,564	104	11,233	104	13,039	Devon
—	—	3	201	4	254	4	317	Cornwall
18	1,033	24	2,160	26	2,489	31	3,087	Somerset
98	6,322	153	13,076	170	17,668	181	21,367	
								West Midland—
31	2,031	42	3,800	52	5,135	56	5,837	Monmouth
66	4,770	101	8,455	107	10,449	118	12,179	Gloucester
9	630	21	1,439	19	1,940	20	2,853	Hereford
56	4,220	67	5,463	75	6,367	78	7,770	Salop
107	7,020	184	13,507	192	16,990	194	20,173	Stafford
31	1,266	84	4,118	92	6,580	96	8,226	Worcester
48	3,106	73	5,414	77	6,862	83	8,426	Warwick
348	23,043	572	42,196	614	54,323	645	65,464	
								North Midland—
24	1,013	40	2,330	49	3,336	47	4,016	Leicester
2	100	3	146	2	110	2	144	Rutland
109	9,868	105	10,823	99	11,385	95	11,870	Lincoln
28	2,016	32	2,820	37	4,070	38	5,064	Notts
33	2,369	39	3,354	41	4,277	48	5,517	Derby
196	15,366	219	19,473	228	23,178	230	26,611	

TABLE G.—*The Ancient Order of Foresters. Progress*

County.	1st January, 1848.		1st January, 1853.		1st January, 1858.	
	Number of Courts.	Number of Members.	Number of Courts.	Number of Members.	Number of Courts.	Number of Members.
North-Western—						
Chester	138	8,766	131	9,570	132	11,998
Lancaster	326	18,220	322	19,632	330	21,781
	464	26,986	453	29,202	462	33,779
Yorkshire—						
York	367	20,139	360	21,698	372	25,794
Northern—						
Durham	47	2,682	45	3,078	64	5,297
Northumberland	2	119	2	136	2	173
Cumberland	18	1,115	15	1,164	13	1,253
Westmoreland	7	455	8	469	8	551
	74	4,371	70	4,847	87	7,274
England	1,604	80,498	1,585	91,769	1,821	129,381
Wales	41	1,497	26	1,394	56	3,393
Ireland	—	—	1	73	1	40
Scotland	23	2,302	6	439	5	812
United Kingdom	1,668	84,297	1,618	93,675	1,883	133,626

The county of the branch is determined, as in Table C, by the position of the district, but it is right to observe that in the Foresters some of the districts hold the exceptional position of having a few of their branches distributed far wide of their own county, though of course the great majority of the members are always situated in the immediate neighbourhood of the district itself.

Forestry, like Odd Fellowship, has not taken deep root in Ireland, but in Wales progresses very favourably, and in Scotland has made vast strides, the members at present being nearly 20,000 in number as against 1,200 in 1863. It will be noticed that in some counties, Cornwall for instance, the order is of quite a recent origin, whilst in Dorset it appears to have died out about 1850, and not to have again taken root until 1867. A careful perusal of the table will also show that in some counties the numerical strength of the courts has been wisely augmented, as though the members are gradually increasing, the courts have decreased in numbers. On the contrary, in other counties, no restraint has clearly been placed on the opening of new branches, and this has operated injuriously to the courts already existing, by rendering it more difficult for them to raise the average members per court.

in the United Kingdom since 1st January, 1848—Contd.

1st January, 1863.		1st December, 1867.		1st December, 1872.		1st January, 1876.		County.
Number of Courts.	Number of Members.	Number of Courts.	Number of Members.	Number of Courts.	Number of Members.	Number of Courts.	Number of Members.	
								North-Western—
150	16,034	154	18,420	147	20,781	146	21,956	Chester
375	27,014	379	28,656	355	30,058	336	29,635	Lancaster
525	43,048	533	47,076	502	50,839	482	51,591	
								Yorkshire—
398	31,264	409	34,429	393	37,265	371	37,683	York
								Northern—
100	9,477	125	14,019	130	17,000	134	18,809	Durham
15	1,065	59	5,230	64	7,532	69	9,308	Northumberland
13	1,515	18	2,268	23	3,007	21	3,223	Cumberland
9	765	8	768	7	937	7	1,042	Westmoreland
137	12,822	210	22,285	224	28,476	231	32,382	
2,592	210,698	3,268	304,351	3,421	370,112	3,487	416,961	England
128	8,011	174	13,283	230	18,760	254	23,216	Wales
16	650	23	1,194	37	2,244	40	2,326	Ireland
6	1,240	11	2,486	50	9,101	108	19,977	Scotland
2,742	220,599	3,476	321,314	3,738	400,217	3,889	462,480	United Kingdom

To show the number of courts that have ceased to exist in each of the last ten years, with the cause thereof, is the purport of the next table.

TABLE H.—*Courts Ceased to Exist.*

Years.	Closed.		Seceded.		Suspended.		Expelled.		Amalgamated.	
	Courts.	Members.	Courts.	Members.	Courts.	Members.	Courts.	Members.	Courts.	Members.
1866	16	215	3	243	25	2,264	—	—	16	—
'67	20	354	2	101	20	1,369	—	—	13	—
'68	19	302	—	—	21	1,581	—	—	15	—
'69	26	328	1	80	47	2,523	2	315	24	—
'70	15	202	3	381	26	1,516	—	—	21	—
1871	9	144	—	—	30	1,967	—	—	22	—
'72	17	171	—	—	32	2,802	—	—	12	—
'73	7	80	3	209	47	4,270	—	—	15	—
'74	16	280	4	94	46	3,173	—	—	8	—
'75	22	460	3	46	22	1,972	—	—	7	85

Grouping the years together it appears—

Years.	Closed.		Seceded.		Suspended.		Expelled.		Amalgamated Courts.
	Courts.	Members.	Courts.	Members.	Courts.	Members.	Courts.	Members.	
1866–70	96	1,401	9	805	139	9,253	2	315	89
'71–75	71	1,135	10	349	177	14,184	—	—	64
Total	167	2,536	19	1,154	316	23,437	2	315	153

Thus within the decennium—

167	courts with	2,536	members have closed.
19	„	1,154	„ seceded.
316	„	23,437	„ been suspended.
2	„	315	„ „ expelled.
Total 504		27,442	

In addition to these 504 courts, 153 have amalgamated with stronger branches. Of the courts suspended—and this has generally arisen from a neglect in making the returns called for by the executive council of the order—I have been enabled to ascertain the number reinstated, which was as follows:—

	Courts.	Members.
1866–70	47	4,774
'71–75	68	6,923
Total	115	11,697

Evidently thus a large proportion, indeed more than a third, of the branches suspended, subsequently comply with the regulations of the society, and are reinstated.

PART IV.

Hitherto in this paper the statistics of each society have been dealt with separately, but in the facts remaining to be given the two orders may be well viewed side by side.

The development of each organisation has been already exhibited in previous portions of this paper, but from the tabular statements having always been presented in such a form as would show the maximum of information for each society, the various facts are grouped together for different periods of years.

	Odd Fellows.			Foresters.	
	Number of Members.	Increase per Cent.		Number of Members.	Increase per Cent.
1st Jan. 1846....	259,374		1st Jan. 1846....	76,990	
		3·2 (decrease)			47·7
„ '56....	251,008		„ '56....	113,752	
		54·6			164·7
„ '66....	387,990		1st Dec. '65....	301,077	
		30·9			63·1
„ '76....	508,013		1st Jan. '76....	491,196	

The very rapid numerical progress of the Foresters is here well illustrated, and there can be no mistake as to which society is most popular in the public eye. Undoubtedly in the earliest stages serious dissensions in the Manchester Unity of Odd Fellows precluded any material progress, and though some of the financial reforms adopted in the order in subsequent years may have operated as a deterrent to members joining, yet it must be remembered that mere numbers does not constitute safety in a financial light, and that, unless the incoming members contribute in proportion to the liability they entail, an increment in the number of members, so far from being a source for congratulation, is a decided disadvantage.

The next table displays the growth of the two orders in the United Kingdom alone for each of the ten years 1866-75, and the same as summarised for the quinquennials 1866-70, 1871-75 :—

TABLE I.—*Progress in the United Kingdom during the last Ten Years of the Manchester Unity of Odd Fellows and the Ancient Order of Foresters.*

Years.	Odd Fellows.				Foresters.				
	Number of Members, 1st January.	Initiations.	Left the Society.	Members Died.	Number of Members, 1st December of the Year preceding.	Initiations.	Members Reinstated.	Left the Society.	Members Died.
1866	368,807	31,462	13,486	5,058	287,246	41,442	724	19,737	3,238
'67	381,725	29,235	15,516	4,978	306,437	38,652	1,307	21,876	3,206
'68	390,466	27,873	15,458	5,153	321,314	36,268	555	21,962	3,333
'69	397,728	28,379	15,588	5,384	332,842	38,459	788	23,598	3,530
'70	405,135	28,939	15,746	5,467	344,961	39,859	1,400	23,888	3,816
	—	145,888	75,794	26,040	—	194,680	4,774	111,061	17,123
1871	412,861	30,683	13,743	5,933	358,516	42,673	889	21,233	4,099
'72	423,868	34,699	15,478	6,171	376,746	48,160	1,814	21,972	4,531
'73	436,918	33,893	17,366	6,097	400,217	49,905	1,070	24,956	4,421
'74	447,348	31,771	13,193	6,413	421,815	47,901	1,230	25,310	4,666
'75	459,513	32,650	16,860	6,916	440,970	51,203	1,920	25,955	5,658
	—	163,696	76,640	31,530	—	239,842	6,923	119,426	23,375
1876	468,387	—	—	—	462,480 (1st of Jan.)	—	—	—	—

For any comparison of the members in these associations with the whole population, some deduction should be made for double membership, as it is not unusual for persons whose earnings are above the average, or who take uncommon interest in these organisations, to belong to both orders; but 10 per cent. would be an ample margin for this error.

Percentages of initiation, death, and secession have been deduced from the preceding table:—

	Initiation.	Mortality.	Secession.
Odd Fellows—			
1866–70	7·421	1·325	3·855
'71–75	7·413	1·428	3·471
Foresters—			
1866–70	11·955	1·051	6·820
'71–75	11·698	1·140	5·825

A material difference will be perceived in the ratios for the two orders. The percentages of initiation and secession are much higher in the Foresters than in the Odd Fellows, whilst in the latter society the rate of mortality is largely in excess of that in the former.

Until quite recently, graduated rates of contribution were by no means generally in force amongst Foresters' branches, and this would undoubtedly have a tendency towards raising the percentage of initiation, as persons could be admitted at rates of payment in many instances out of all proportion to the burden entailed. This need not of course necessarily result from a uniform rate of subscription irrespective of age, but putting aside for the moment all question of the equity of making the younger members pay for the old, it is to be feared that practically the contribution demanded is, in nine cases out of ten, only just adequate for the youngest age eligible for admission, and thus altogether insufficient for the older entrants. Again, in the Odd Fellows every lodge is bound to adopt rates of contribution not below a certain graduated minimum scale, whereas in the Foresters each court is permitted to exercise its own judgment on this important matter, and thus rates of different degrees of efficiency exist. Moreover, though in both associations juvenile branches exist, these have been very fully developed in the Foresters, and whereas on the 1st December, 1867, the total number of members in the Foresters' juvenile societies was 4,858, on the 1st January, 1876, it had risen to 31,366, with an accumulated fund of 20,391*l.*, and during 1875 8,159 members had been admitted, and on attaining the proper age for initiation 1,723 transferred to courts. The institution of juvenile branches is an

important feature in the affiliated orders, more especially in the Foresters, where the youngest age for initiation in courts is fixed at 18. In the Odd Fellows the age for admission into lodges was in 1869 lowered from 18 to 16.

The variation in the rates of mortality may be easily accounted for. It cannot fail to have been noticed that in 1846, when the Foresters numbered but 76,990, the numerical strength of the Odd Fellows was already 259,374. It would naturally therefore be expected that the members of the latter order were, as a body, of a more advanced age, and this will, in a subsequent table, be shown to be the case. It may be further stated that in the earlier portion of this century persons joined these institutions at an age far in advance of that for say the last twenty years. Indeed, if the average age at admission in the Odd Fellows is regarded for the year 1840, and the same for the last twenty years, a difference of nearly five years will be found. That in both associations the rates of mortality should in the quinquennium have somewhat increased, is a circumstance that must naturally arise, for the members must year by year be ageing. The increment would be more marked were it not for the large influx each year into the societies of young blood.

Coming to the rates of secession, the higher rates in the Foresters mainly arise from two causes, viz., the younger age of the members and the non-graduation of the subscriptions. That age has a most important influence on the rate of secession is incontestable. I do not propose in this paper to present statistics as to the *ages* of initiation, death, secession, &c., of the members, but I have the facts for nearly a million and a half of observations.* Regarding secessions, the statistics clearly prove that as age increases, in a much greater ratio do secessions decrease. The influence on secessions of a non-graduated scale of payments will be self-evident. In early life the chances of both sickness and death are at a minimum, and if cessation of membership for a year or two entails no extra tax in the shape of increased contribution on rejoining the society, it is but natural that many should be disposed to run the risk and effect what they perhaps might regard as a saving of money. Viewing generally the rate of secession in the affiliated orders, it should be

* The actual number of observations tabulated for an inquiry I made a short time since, for determining the age of initiation, secession, &c., among Odd Fellows and Foresters, was :—

Deaths	49,323
Secessions	125,811
Initiations	1,282,784
	1,457,918

remembered that, though perhaps not to the same extent now as formerly, yet many still join these societies out of mere curiosity, and thus often leave before it is requisite to subscribe the balance of their initiation fee.

The average age of the members on the 1st January, 1876, is exhibited in the following table, from which it will be seen that as a body the Odd Fellows were of an average age of $36\frac{1}{3}$ and the Foresters $33\frac{1}{2}$ years:—

TABLE J.—*The Average Ages of the Members on the 1st January*, 1876.

County, &c.	Odd Fellows.	Foresters.	County, &c.	Odd Fellows.	Foresters.
	Years.	Years.		Years.	Years.
South-Eastern—			*West Midland—*		
Kent	34·0	31·7	Monmouth	34·1	33·1
Surrey	33·8	33·6	Gloucester	35·3	34·5
Sussex	35·3	31·2	Hereford	35·7	31·0
Hants	32·6	32·5	Salop	35·4	33·1
Berks	33·6	33·3	Stafford	36·8	32·2
			Worcester	36·9	31·1
			Warwick	37·8	32·9
South Midland—			*North Midland—*		
Middlesex	35·6	33·4	Leicester	36·1	31·2
Herts	33·6	30·6	Rutland	33·8	35·3
Bucks	37·0	33·3	Lincoln	36·5	38·3
Oxford	31·7	30·4	Notts	38·8	32·3
Northampton	35·2	33·5	Derby	37·9	33·1
Huntingdon	37·8	33·8			
Bedford	37·0	31·8	*North-Western—*		
Cambridge	34·6	31·0	Cheshire	37·0	37·3
			Lancashire	39·2	37·5
			Yorkshire—		
Eastern—			Yorkshire	38·9	37·6
Essex	33·5	29·7			
Suffolk	35·1	32·4	*Northern—*		
Norfolk	35·3	32·6	Durham	34·3	34·1
			Northumberland	35·2	32·5
			Cumberland	36·1	34·0
			Westmoreland	39·1	35·4
South-Western—					
Wilts	33·0	32·1	Wales	34·4	32·4
Dorset	31·7	30·5	Ireland	38·3	32·1
Devon	33·1	32·4	Scotland	31·9	28·5
Cornwall	31·2	31·9			
Somerset	36·4	31·8	United Kingdom	36·3	33·6

The averages vary much in the different counties; amongst the Odd Fellows the maximum (39·2) being attained in Lancashire, and the minimum (31·2) in Cornwall; and for the Foresters the highest average (38·3) in Lincolnshire, and the lowest (28·5) in Scotland. With the exception of the counties of Lincoln, Rutland, Cheshire, and Cornwall, in every division the Foresters are, on the average,

of a younger age. On the 1st January, 1876, the number of members aged 80 and upwards was, in the Odd Fellows nearly 330, and in the Foresters 140; and of these, in the Odd Fellows over 200, and in the Foresters 75 were in Lancashire and Yorkshire. Prior to the present enumeration the average age of the Foresters as a body was unknown, but as for the Odd Fellows it was 35·6 years in 1866, 35·9 in 1870, 36·2 in 1874, and 36·3 in 1876. The mean age in 1871 of the male population in England and Wales aged 15 and upwards was 37·0 years; in 1851 it was 36·5, and in 1861 36·8 years.

Of recent years the executive of each order have succeeded in obtaining from the numerous branches in the United Kingdom, financial returns displaying the receipts and expenditure for the year. At first some little difficulty was experienced in the matter, but by a firm enforcement of the laws of each order this was soon overcome, and the returns now very nearly embrace the whole society; in 1874 under 1 per cent. only of the members being omitted. As I have already observed, the system of returns in the affiliated orders admirably displays their efficient organisation, and reflects great credit on the management. Indeed in this respect these societies are much in advance of the generality of friendly societies. It is not within the province of this paper to enter into the nature of the details which the returns embrace, but some of the schedules are of a most complex character, and must call for the exertion of much labour and patience on the part of the branch secretaries. It is all the more important to bear this in mind, as the work of these officials is in the majority of instances a labour of love, the posts being honorary. It must be to them some reward to notice the continued prosperity of their associations, and the hold they have on the working classes of this country. To this result the efficient returns have no little contributed, for the more the members of any friendly society can be induced to attend to its operations, not only will they be more likely to take an interest in the fundamental laws and principles of such associations, but it must conduce greatly to the stability and usefulness of their own society.

TABLE K.—*The Manchester Unity of Odd Fellows, Summary of Financial Returns from* 1865.

Year.	Included in the Returns.		Total Number of Members in the United Kingdom.	Number of Members not Returned.	Capital at End of the Year.	
	Lodges.	Members.			Lodge, Sick, and Funeral Funds.	District Funeral Fund.
					£ s. d.	£ s. d.
1865	3,036	332,343	368,807	36,464	1,916,294 19 6	36,166 16 6
'66	3,177	355,401	381,725	26,324	2,112,126 17 8	35,370 4 2
'67	3,295	374,035	390,466	16,431	2,294,673 15 8	37,142 19 2
'68	3,222	384,427	397,728	13,301	2,410,948 10 9	33,486 19 9
'69	3,423	396,794	405,135	8,341	2,564,683 18 5	43,974 6 2
1870	3,473	407,546	412,861	5,315	2,692,316 12 7	42,189 18 7
'71	3,463	416,232	423,868	7,636	2,786,888 3 1	50,994 8 5
'72	3,461	429,028	436,918	7,890	2,921,065 11 5	50,246 13 10
'73	3,459	442,147	447,348	5,201	3,085,676 5 4	49,384 3 2
'74	3,526	456,580	459,513	2,933	3,294,425 14 2	56,783 10 11

Year.	Income.			Expenditure.	
	From Contributions.	From Interest.	From Admission Fees, &c.	For Sickness Benefits.	For Funeral Benefits.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1865	309,674 10 7	60,405 16 –	11,418 4 11	205,076 11 2	60,426 1 5
'66	332,840 7 –	69,145 5 9	11,850 3 3	206,695 2 7	66,477 11 2
'67	355,222 17 6	73,952 18 1	11,249 2 10	223,258 16 11	69,655 2 10
'68	368,863 8 –	80,243 3 11	10,500 18 10	239,819 11 2	70,601 5 6
'69	378,222 11 3	86,606 12 2	10,536 2 8	260,075 13 1	76,018 11 5
	1,744,823 14 4	370,353 15 11	55,554 12 6	1,134,925 14 11	343,178 12 4
1870	392,110 14 –	89,946 9 8	10,796 13 10	276,876 16 –	77,961 18 1
'71	399,867 14 11	95,777 4 8	11,405 2 7	280,279 4 11	83,024 6 2
'72	413,443 9 10	102,202 19 7	12,446 2 5	266,290 10 5	87,532 13 5
'73	422,385 11 9	107,766 14 7	12,243 15 9	265,921 4 5	86,635 18 3
'74	441,169 16 3	115,756 3 11	11,678 19 8	283,143 18 5	92,213 4 8
	2,068,977 6 9	511,449 12 5	58,570 14 3	1,372,511 14 2	427,368 – 7

Note.—I have since received the returns for 1875, and the following is a summary of the facts. Included in the returns, 3,522 lodges with 462,429 members. No returns for 5,958 members.

Income.	£ s. d.	Expenditure.	£ s. d.
Contributions	451,081 14 10	Sick benefits	307,629 12 10
Interest	123,021 15 –	Funeral „	102,295 15 3
Admission fees, &c.	11,454 18 10		
	585,558 8 8		409,925 8 1

TABLE L.—*The Ancient Order of Foresters, Summary of Financial Returns from* 1865.

Year.	Included in the Returns.		Total Members in the United Kingdom (1st December).	Capital at End of the Year.	
	Courts.	Members.		Court, Sick, and Funeral Funds.	District Funeral Fund.
				£ s. d.	£ s. d.
1865	2,909	262,452	287,246	723,869 7 10	75,732 7 4
'66	3,122	292,174	306,437	841,375 12 1	89,983 – 5
'67	3,177	299,994	321,314	908,919 2 3	98,609 10 8
'68	3,461	330,261	332,842	1,022,407 9 10	109,331 10 1
'69	3,480	340,081	344,961	1,081,932 14 4	118,555 10 9
1870	3,558	356,189	358,516	1,166,877 10 6	129,566 6 3
'71	3,623	375,925	376,746	1,243,092 4 2	134,969 6 4
'72	3,695	401,907	400,217	1,353,415 7 6	144,306 5 6
'73	3,689	419,875	421,815	1,465,053 19 11	159,644 18 7
'74	3,750	437,320	440,970	1,580,283 1 3	172,366 12 9

Year.	Income.			Expenditure.	
	From Contributions.	From Interest.	From Admission Fees, &c.	For Sickness Benefits.	For Funeral Benefits.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1865	244,195 17 3	20,536 7 –	13,924 1 4	153,540 3 9	50,836 12 8
'66	276,086 12 2	24,513 – 10	15,018 18 3	154,091 19 9	65,035 15 6
'67	287,678 17 –	26,810 18 11	13,052 15 6	166,258 18 6	67,944 14 7
'68	310,456 3 5	29,381 6 –	13,337 15 11	193,278 6 6	70,411 – –
'69	318,942 – 3	31,378 4 11	13,507 13 4	203,790 4 4	73,199 6 7
	1,437,359 10 1	132,619 17 8	68,841 4 4	870,959 12 10	327,427 9 4
1870	332,047 18 11	34,767 4 9	13,284 8 3	220,724 18 11	77,784 6 2
'71	349,825 16 6	38,289 18 2	14,487 18 8	232,821 8 10	83,568 17 1
'72	373,398 2 9	43,183 17 3	15,490 10 2	228,818 14 7	89,154 18 5
'73	387,675 7 –	44,316 2 5	15,235 14 10	224,826 13 8	88,068 12 3
'74	407,436 10 –	49,352 4 7	14,586 18 4	248,833 17 4	91,390 6 9
	1,850,383 15 2	209,909 7 2	73,085 10 3	1,156,025 13 4	429,967 – 8

Note.—The returns for 1875 have since been received, and the following is a summary. Included in the returns, 3,816 courts, 459,371 members.

Income.	£ s. d.	Expenditure.	£ s. d.
Contributions	427,110 10 5	Sickness benefits	282,165 12 4
Interest	52,676 9 6		
Admission fees, &c.	14,918 6 7	Funeral „	98,560 17 3
	494,705 6 6		380,726 9 7

The form in which the facts are presented in the reports of the societies has been somewhat departed from, as it would but confuse those not thoroughly conversant with the financial organisation of the affiliated orders. Some slight difference will be noticed in the amounts set forth for funeral benefits in the Odd Fellows' analysis, from the sums mentioned in a former table (Table B); but the difference between the two sums is to be attributed to some districts receiving from lodges an amount somewhat in excess of that actually paid in funeral benefits.

From these tables some interesting statistical facts can be deduced as to the average contributions per annum paid in respect of sickness and funeral benefits; also the sum received per member in respect of interest on accumulated funds, and lastly the expenditure per member for sickness and funeral benefits.

Average per Member.

	Receipts.		Expenditure.	
	Contributions	Interest.	Sickness.	Funeral.
Odd Fellows—	*s. d.*	*s. d.*	*s. d.*	*s. d.*
1865–69	18 11	4 –	12 4	3 9
'70–74	19 3	4 9	12 9	4 –
Foresters—				
1865–69	18 10	1 9	11 5	4 4
'70–74	18 7	2 1	11 7	4 4

These averages per member are slightly below the true rates, inasmuch as the computations being based on the members living at the end of the year, no allowance is made for those whose membership dates for only portions of the year, as for instance the members joining each year.

The greatest divergency in the rates occurs in respect to the interest per member, but reference to the tables will show that the accumulated fund of the Odd Fellows is much the larger of the two; not that from this it *necessarily* follows, as some argue, that the order therefore must be in a better financial condition. The fallacy of judging of the financial status of a society by a consideration of the assets, irrespective of the liabilities, is self-evident. The investments also of the Odd Fellows produce on an average a better rate of interest, which would of course tend to raise the average amount received for interest per member.

	Odd Fellows.	Foresters.
	Per cnt. £ *s. d.*	Per cnt. £ *s. d.*
1865–69	3 10 4	3 4 4
'70–74	3 13 8	3 7 2

In both orders in some few instances no returns from the branches have been received, so that to this extent Tables K and L are deficient, but proceeding on the assumption that in those cases the figures may be fairly approximated on the average of the returns sent in, the receipts and expenditure in respect of sick and funeral benefits* during the last ten years for the members in the United Kingdom have been as follows:—

	Receipts.			Expenditure.	
	1865-69.	1870-74.		1865-69.	1870-74.
Odd Fellows—	£	£		£	£
Admission fees, &c.	58,591	59,361	Sickness benefits	1,197,000	1,391,000
Interest	390,630	518,340			
Contributions.....	1,840,300	2,096,900	Funeral do.	361,970	433,130
Total	2,289,521	2,674,601	Total	1,558,970	1,824,130
Foresters—					
Admission fees, &c.	71,902	73,346	Sickness benefits ...	909,680	1,160,100
Interest	138,520	210,660			
Contributions.....	1,501,300	1,857,000	Funeral do.	341,990	431,500
Total	1,711,722	2,141,006	Total	1,251,670	1,591,600

Thus in the ten years these two affiliated orders have received in respect of sickness and funeral benefits no less than 8,816,850*l.* and disbursed 6,226,370*l.* These amounts would be considerably augmented if the figures relating to the members of the orders not resident in the United Kingdom were also included.

The development of the orders abroad can be traced in the following table:—

TABLE M.—*Number of Members Abroad in* 1866 *and* 1876.

	Odd Fellows.		Foresters.	
	1866 (1st January).	1876 (1st December).	1865 (1st December.)	1876 (1st January).
Victoria	6,503	11,952	9,313	10,979
South Australia.....	6,036	9,192	2,349	4,181
New South Wales	2,260	6,225	806	1,146
Queensland.....	—	1,396	—	150
Tasmania	521	1,003	20	250
New Zealand	2,512	6,076	1,011	3,335
South Africa	359	1,380	175	1,168
Canada	484	1,150	—	2,188
United States.....	86	116	45	3,738
Other portions of the world	422	1,136	112	1,581
Total	19,183	39,626	13,831	28,716

* The financial tables in this paper deal only with the sick and funeral benefits of the branches, but besides these, which constitute the main benefits of

Our colonies claim, as is natural, the lion's share of these members, but branches exist in all quarters of the globe,—Constantinople, San Francisco, Buenos Ayres, Lima, Bombay, and Vancouver Island being represented.

By a system termed "clearances" a member can join any other lodge or court in his order, and possess all privileges of membership, the object of clearances being to enable members permanently residing at a distance from their branch to transfer their membership to any other branch. In a large organisation composed essentially of the working classes this is an important right, as, being compelled to leave the locality of the branch, a member first joined need not necessarily entail forfeiture of membership in the order. The number of clearances do not appear to have been recorded in the Odd Fellows until 1870, nor in the Foresters until 1871.

Year.	Number of Clearances Issued each Year.	
	Odd Fellows.	Foresters.
1870	964	—
'71	694	1,074
'72	863	1,069
'73	896	1,043
'74	554	1,008
'75	540	1,095

If a member should be residing only temporarily at a distance from his branch, or if even permanently so, he should nevertheless still be desirous of retaining his membership therein instead of transferring it to another, he can, by the mutual agency of the branches, pay his subscriptions to and receive his benefits from any court or lodge in the place where he goes to reside, such branch being recouped its expenditure by his original branch. So far as I can ascertain about 5 per cent. of the members avail themselves of this power.

In both orders what are designated "travelling cards" or "licences" are granted, their object being to entitle a member to some relief when travelling in search of employment. These cards or licences remain in force a stated time, and the bearer can obtain a certain specific relief from each place he passes through. For the Odd Fellows the statistics may be presented in the following condensed form :—

each order, many of the branches offer additional advantages to their members. Separate funds are generally maintained for these, and in some instances even distinct societies, as for example the numerous widow and orphans' funds. In the Foresters on the 1st January, 1876, the widow and orphans' funds embraced 64,724 members, with an accumulated fund of 64,134*l*.

Quinquennium.	Number of Cards Granted.	Amount Paid to Travellers.	Number of Travellers Relieved.
		£ s. d.	
1848–52	4,721	4,467 14 4	—
'53–57	2,500	1,618 12 8	—
'58–62	3,797	3,590 11 1	—
'63–67	2,864	2,406 – 9	44,278
'68–72	2,204	1,750 6 –	50,218
'73–75	466	282 13 5	6,747

It was thought that to give the facts for each year would occupy too much space, but it is impossible otherwise to show how the issue of these cards fluctuates with the state of the labour market. For instance, in 1862, at the time of the great depression in the cotton manufacturing districts, the cards issued ran up to 1,378 in number. In the previous and subsequent years the numbers were as follows: 1860 406 cards, 1861 755 cards, 1862 1,378 cards, 1863 943 cards, 1864 557 cards, and in 1865 378 cards. There can be deduced from the figures above given the average amount received in respect of each travelling card, and the mean number of times each traveller was relieved. For the Foresters I have not been able to obtain further information about travelling licences than the mere number issued, and that only from the year 1872.

Year.	Number of Travelling Licences Issued.
1872	337
'73	251
'74	272
'75	258

Peculiarly enough, in the Odd Fellows' travelling cards the years hold almost precisely the same positions in point of the maximum and minimum issued.

The oldest registered affiliated society is the Ancient Order of Foresters, its registry dating from October, 1850. The branches of the Odd Fellows and Foresters have gradually come under the Friendly Societies' Acts, until, by the action of their annual meetings, on the 1st January, 1876, all were so registered. That it took many years to effect this good reform the following figures for the branches of each order in the United Kingdom show :—

Year.	Odd Fellows.		Foresters.	
	Total Number of Lodges.	Lodges Registered.	Total Number of Courts.	Courts Registered.
1853	—	—	1,618	537
'58	—	—	1,883	920
'63	—	—	2,742	1,948
'68	3,474	2,749	3,476	2,815
'73	3,551	3,467	3,738	3,515

The numerical strength of many of the branches is very weak. Any combination of persons to secure benefits contingent on the duration of human life, or the sickness appertaining thereto, should comprise a body of sufficient magnitude to secure average results. Without debating what precise number this should be, it is very clear that a great number of the branches do not come up to any such standard. In 1868 in an investigation I made as to the number of members the Odd Fellows' lodges in the United Kingdom were then composed of, it was found, that—

72	lodges, or	2	per cent., had	3	to	15	members.
241	,,	7	,,	16	,,	30	,,
456	,,	13	,,	31	,,	50	,,
605	,,	17½	,,	51	,,	75	,,
522	,,	15	,,	76	,,	100	,,

For the Foresters, Table G affords the means of determining the average members per court from the year 1848, in the United Kingdom as a whole, or for any of the subdivisions contained in the table. On the 1st January, 1876, there were only thirty-one courts in the order with a constituency of 500 members and upwards, the maximum being attained by a court in Glasgow with 882 members.

In both orders the average number of members per branch has been gradually increasing, as the following figures exhibit:—

Year.	Odd Fellows. Average Members per Lodge.	Foresters. Average Members per Court.
1846	—	47
'56	79	65
'66	105	86
'76	124	113

In previous tables (Tables D and H) dealing with the branches that had ceased to exist, it was observed how low were in most cases the average members per branch. When is considered the multitude that is every year enrolled in these affiliated orders, the strengthening of the branches should not be a difficult matter. Restriction should as much as possible be placed on the opening of new courts or lodges. Clearly unless there is a fair prospect of early enrolling enough members to secure the branch from numerical failure, it is a most injudicious policy to allow its opening, for it can only tend to render it more difficult for those branches in the immediate neighbourhood to strengthen themselves.

If it is essential that the lodges or courts should possess a fair average of members, much more so is it requisite that the district should, as the whole object of this combination is by obtaining a magnitude of members to equalise the funeral risk. Districts are composed of an aggregation of courts or lodges, and are of various

numerical strength. Indeed, in point of numbers, the variation in districts is even greater than in the smaller branches; thus some districts have at present under 200 members, whilst one in the Odd Fellows (the North London) has 12,452, and another in the Foresters (the London United) no less than 78,161 members.

It has been urged by some that one drawback to the affiliated system of friendly societies is the cost entailed by the threefold management of executive, district, and branch. That the executive, notwithstanding its multiform duties, necessitates but a moderate cost, the following statistics giving the average expenses of management per annum of this body show:—

Years.	Odd Fellows.	Years.	Foresters.
	£ s. d.		£ s. d.
1848–52	998 2 6	1866–70	1,188 17 9
'53–57	862 5 1		
'58–62	944 15 10		
'63–67	1,004 10 6	'71–75	1,339 4 2
'68–72	1,267 1 9		

This charge for managing and controlling vast associations of about half a million members each, will compare favourably with the cost of any similar organisation extant. Even these expenses such as they are, are nearly, if not quite, defrayed by the profits realised by the executive of each order in constituting itself the wholesale agent for the supply to the branches of stationery and goods.

The results presented in this paper have entailed the examination and analysis of a great mass of documents, so that it is quite possible that a few slight errors have crept in, but every precaution to guard against this has been taken. Of course, I cannot be responsible for the accuracy of the details in the reports, &c., of the societies, but whenever possible, and it has often been feasible, these have been most carefully checked. Attention is specially drawn to this subject, inasmuch as some of the facts I have given will be found to differ somewhat from those that appear in the documents of the orders; but so far as painstaking research can guarantee accuracy, the statistics in this paper may be thoroughly depended on.

In the publications of the societies, the statements that profess to exhibit the development of the orders, and they are but few and meagre in character, are mainly faulty from the results not being systematically tabulated; the facts shown for consecutive years embracing for instance different areas, or again items inserted for one year being omitted in a subsequent year. On examination these discrepancies will be found to account for any differences that appear.

Discussion *on* Mr. Neison's Paper.

Mr. Lumley, Q.C., asked whether Mr. Neison could give the number of officers employed by the various courts or lodges, and what, if any, remuneration they received. He thought there must necessarily be a large staff employed, not only for the purpose of managing affairs, but for investigating the circumstances of the different contributors and ascertaining that they were entitled to what they actually received. He had lately had occasion to be present at a deputation of some of the members of these societies, and it certainly seemed that, although the central authority had regulations of their own, and general rules were recommended for their adoption, there was great diversity as to the manner in which the business of the different branches was carried out.

Mr. Walford, after referring to the importance of such facts and figures as the paper dealt with being brought together, said that during the last few years the legislation in reference to friendly societies had been multiform, and, he was constrained to say, some of it not very wise. He was much afraid whether the voluntary system contemplated by the Friendly Societies' Act would be a good and effectual system; and he was glad to hear from Mr. Neison that the affiliated orders in the Odd Fellows, without any exception, and in the Foresters, with few exceptions, were registered under the Act, which was a marked evidence of good faith. But there was another class of societies which he did not think would see the thing in the same light, and might not be disposed to offer to the public the security which registration under the Act was calculated to afford. The legislature itself seemed to him to be weak on the subject of the trades' union aspect. The Bill of last session enabled trades unions unfortunately to embody some of the features of friendly societies. Although it was a point that did not arise in the paper, he would speak freely upon it, because he could not help thinking that there was great danger in a friendly society being in any way associated with the idea of trades unionism, and for this reason: a society might go on with a large number of young members, and accumulate, as it should, large sums of money in order to provide for the benefits which, as a friendly society, it ought to give to its members in their old age, and he could not help thinking that the temptation would be strong indeed if the trades union element were introduced into friendly societies to apply the funds, not for the purpose for which they were intended, but for other purposes which, apart from the political aspect, were unworthy of the object which should be kept in mind in all friendly societies. He thought this was an element of danger, and he still hoped that the legislature might be disposed, upon viewing the progress of the societies registered under the Trades Union Act, to consider whether a very unwise step had not been taken in that direction. The legis-

lation seemed to him to be so complex that he had, at the end of last session, abandoned all hope of seeing it made clear again; but he was glad to find that one good thing that came out of this was the report of the Registrar of Friendly Societies, which appeared a few months ago. Those who had seen it must have been pleased at the care the registrar had taken to present his statement in a clear and intelligible form, and he must say that for the first time he began to have some hope when he saw the man at the head of affairs evidently determined, as far as lay in his power, to enable everyone to see the course that such legislation would lead to; and if the facts were properly brought out, he had no doubt that Mr. Neison and others capable of dealing with them would very soon draw attention to any departure from that line which was the fair intention of benefit societies, namely, to enable the working classes to feel that true independence which all men should feel in order properly to enjoy life. He had had a good deal of experience connected with friendly societies in a way that did not fall directly under the scope of the paper. He had been for about twenty-six years connected with an accident insurance company, which had received proposals from a vast number of friendly societies in various parts of the kingdom, to undertake the accident portion of their risks, and he was able to state, after a good deal of experience, that never, on any one occasion, had these men made a mistake as to the rates they should offer for those risks, showing the shrewd management that characterised many of these societies. He endeavoured still to hope, although some friendly societies might not find themselves in a position to comply with all the requirements or intentions of the Act, that, on the whole, the legislation of the last few years would be productive of good, and he was strongly of opinion that if fresh legislation were required, the working men would have the good sense to agree to its being introduced and enforced.

Dr. Balfour, F.R.S., thought the Society very much indebted to Mr. Neison for his paper, the preparation of which must have involved a great deal of labour. The results, as far as they went, were very clearly stated, although there were certain points on which he should like further information which, he hoped, would be furnished by Mr. Neison at some future time. He was struck with the increase of mortality in both the societies in each quinquennium. This, perhaps, might be accounted for by the increase of age of the members, but there was a point he thought would to some extent have counteracted that, which was that in the Odd Fellows the age of initiation during the last quinquennium was reduced from 18 to 16. He thought it would be very desirable to have the rate of mortality given according to age in quinquennial or even decennial periods. In a paper published a good many years ago, on the mortality of the dockyard workmen at Copenhagen, he was struck with the great increase in the mortality of the men after the age of 50, and he thought it would be desirable to ascertain whether any similar increase took place among the working population of England. He was sorry to say that in the instance

referred to the mortality increased from diseases which were supposed to be mainly dependent upon habits of intemperance, such as delirium tremens, apoplexy, and other diseases of the nervous system; and he thought it would be a valuable contribution to vital statistics if a statement could be furnished of the classes of diseases by which the members of the societies now under consideration died, and the ages at death. He observed that the rate of mortality of the Foresters was lower than that of the Odd Fellows, but there was no statement of the relative ages of the members of the two societies, and it might perhaps be a discrepancy dependent entirely upon the difference of age. There were many other points to which, if he had come prepared to speak on the subject, he should have wished to draw attention, but the points he had alluded to were of so much importance that he had ventured to call Mr. Neison's attention to them in the hope that, on a future occasion, he might afford the members of the Society an opportunity of learning what was the actual state of the case in these two classes of societies.

Sir George Young, Bart., after expressing his personal indebtedness to Mr. Neison for his valuable paper, said that he had acted for about a year and three quarters as one of the assistant commissioners to the Friendly Societies' Commission, and in that capacity it was his duty to visit various districts in the south, east, and west of England, and to have intercourse with the officers of the various societies, and to obtain certain calculations of facts for the use of the commission, which he had the honour of embodying in a short report. The special object of his mission was not, however, to deal with figures, but rather to deal with the difficulties of members, or the moral circumstances under which the work was carried on. If the tendency of recent legislation was to lead to any confusion as to whether a trades union was or was not a friendly society, then he should say it was injudicious and unwise, because they differed in an obvious and essential point. The trades union funds were, in the first place, devoted to trade purposes; and if trade purposes, as understood by the managers and trustees, required the whole fund for the maintenance of what they would consider a just strike, the members expecting benefit in the case of sickness or old age would go to the wall. At the same time there was another aspect of the question. No doubt the trades unions existed for purposes of war—for a strike was an industrial war—and in time of peace they were preparing for war, and they might have very large funds for that purpose. When these funds accumulated they had a tendency to prevent the war, and, therefore, in the largest and best trade societies strikes were becoming less known; and although one could not look forward to the time when strikes would cease, that was the object of trades unions. That being the case, the best thing that could happen was that a society with large funds should be allowed gradually, imperceptibly, and by a process of natural selection, to drift into the position of a friendly society. There were many small societies which were now friendly societies, and doing a good work in their separate spheres, which had begun as trade societies. Care should be taken not to

break down the bridge which in this way enabled a trades union to pass into a friendly society. No one was more impressed with a sense of the danger that the working man should think the trades union provides for him in the same way as the friendly society does. For instance, among the least educated portion of the working classes, the agricultural labourers, he found during his labours that in one place there was a wild state of excitement as to the benefits that were to accrue to them from the agricultural labourers' union lately established. Many of them anticipated large benefits in time of sickness from subscriptions of half the amount that were paid to friendly societies, although, he need not say, those prospects were entire delusions. As soon as the strike began, which was the purpose for which the society was founded, the benefits, the provision, *i.e.* for sickness and funerals, would entirely vanish. Dr. Balfour had made some remarks as to the health of the dockyard men in Sweden, and it occurred to him (Sir G. Young) that for tabulating purposes, very valuable statistics as to the various diseases could be obtained from the authorities at Her Majesty's dockyards. From his own personal knowledge, he could say that these statistics were much more full and accurate than those of any friendly society. Some societies published what are called "experience returns," dividing the diseases among various trades, and this would also form a valuable and important item for any paper that might be brought before the Society. He wished to express his hearty concurrence with regard to the value of the work done by Mr. Ludlow, and he hoped he would not be stinted in actuarial assistance, which was so necessary for the purpose of analysing the statistical condition of societies, and he also hoped that by giving them information at a cheap rate they would have the benefit of the Act and be put in a sound position. He also wished to call attention to the admirable character of the hierarchy of the affiliated orders. The division, first into lodges and afterwards into districts, struck him early in the investigation as one that deserved more attention than had been paid to it. The respective areas on the one hand of the lodge and on the other of the district had been very carefully considered and judiciously arranged. Nothing was more necessary in the case of the sick benefit than close inspection and familiar knowledge of the members' circumstances. Nothing, on the other hand, could be so necessary in the case of the funeral benefit than a large area over which to equalise the risk; and this had been attempted to be remedied by the division and subdivision of the orders. It was a complex arrangement that had come out of the necessity of the case, and, like all such arrangements, had fulfilled its ends most admirably. The Foresters were in a more rudimentary condition than the Manchester Unity of Odd Fellows; and the subdivision above mentioned was not so thoroughly carried out. Many of the oldest, most wealthy, and most popular of the Foresters' lodges in their respective neighbourhoods were not as yet affiliated to any district. They took the whole of the burden on their own shoulders, and kept up a sort of independence which was satisfactory to them; but although some old branches might

maintain this position through their *esprit du corps*, he could not but think that the other system was the better one. With regard to the less rapid development of Odd Fellows in recent years, the Odd Fellows had not of late been anxious, as it seemed to him, to increase their numbers very largely. He did not say that they had not pushed themselves forward actively, and tried to open new lodges; but in many places where lodges were established they were not so anxious to open new lodges, and still less anxious to introduce members largely into the lodges already existing. This, of course, naturally arose where the lodge felt itself to be in a solvent position, and did not care to spend labour in order to increase its numbers. The *esprit du corps* of the order had not in all cases been found sufficient to counteract the natural tendencies of a wealthy society. This was a fact worthy of notice, because an impression might be conveyed that the Odd Fellows were a declining society as compared with the Foresters. They were in some places in a stationary position with regard to numbers, but not necessarily therefore in a declining financial position. As regards the prosperity of the whole order, they might be contented with the increase in their numbers, although it was eclipsed by the Foresters, who were now treading close upon their heels. Mr. Neison had made the important remark that a large percentage, especially of young members, allowed their payments to lapse for non-payment of subscriptions; and he would call attention to the fact that the amount of lapsed contributions received from those who did not survive as members to claim any benefit was a very large item. One of the points which he had brought to the notice of the members of clubs, rather, perhaps, by way of inviting criticism than by way of recommendation, was this. It seemed to him, and it might seem to others, that working men were tempted to invest too large a proportion of their income in providing against one only of the numerous ills of life, say sickness or the funeral benefit, that, in fact, it was parting too much with the control of their means by tying up so large a sum in a friendly society from which they could not withdraw it; and he put the point whether something of the nature of return value for their subscriptions might not be accorded to departing members; but the answer was made:—"We depend upon the lapsed members for so large a proportion of our receipts, that it would not do." He would also call attention to the slow progress of friendly societies in Ireland. The Foresters were making some way in Belfast and the northern districts of Ireland, but unfortunately the lodges were, as was too frequently the case with regard to social movements in Ireland, distracted by religious and political differences. That was the only exception he knew of where politics had been allowed to enter friendly societies. A very remarkable circumstance in connection with the county distribution of orders, arising, no doubt, out of peculiarities of race, came under his notice in Cornwall. The Cornish were gregarious to a degree which was hardly intelligible in the more exclusively Saxon districts of England. They sometimes rushed, so to speak, after a society, and immediately lodges were opened over the whole of the mining district.

Then, perhaps, the society became unpopular, the district was dissolved, the lodges broken up by dozens, and the men either lost their contributions or forfeited them, and in a short time started a new society. Thus the Manchester unity in the west of Cornwall had been almost extinguished, and a very inferior society, the Philanthropic Union, had taken its place. It was true the Truro district of the Manchester unity had taken the place of the old Hale district which broke up; but it did not represent the same class of members. In one part of his paper, Mr. Neison said:—"It is from the practice of one or more branches seceding and setting up new affiliated orders, in which the special ground of complaint with the parent society, &c." The Manchester unity had no claim to be the parent society of the other unities of Odd Fellows, although he believed one or two in the north of England had seceded from them. The Odd Fellows were founded at the beginning of the last century, somewhat on the same principle as the Freemasons, and had a good deal of the password system and mystery which belonged to that order, and they had gradually developed into their present organised shape. There was a movement recently going on among several smaller unities of Odd Fellows in the south of England, to unite their "unities," which would no doubt be beneficial; but the difficulty in amalgamation was to settle as to the mutual liabilities, where the rules had been different. The same difficulty attended the admirable system of clearances, which was giving way to a system by which each lodge constituted itself an accountant for the others whose members might be residing in the district. [Mr. Neison: It is Foresters you are referring to, because that system of clearances is carried on to a very limited extent in the Odd Fellows.] It was the Foresters to whom he was referring. He understood that the juveniles were not included in the statistics given of the membership of the orders. [Mr. Neison: They are not regarded as being members.] The branch for juvenile funds was not a satisfactory one, having been started more for the sake of increasing the popularity of the society and drawing the youth in at a proper age. For the most part he thought that it was apt to foster a love for fine clothes and galas, which would, he hoped, die out in proportion as the importance of the work and the true theory of the admirable agencies that carried it on were recognised. One other important point noticed by Mr. Neison was the number of miserably small affiliated orders that were sometimes started from motives of private pique. One cause of these he would notice especially, which was, their being started for the benefit of the publicans. Another notion, at the opposite end of the scale, was to be observed in the case of the temperance orders, especially "The Sons of Temperance," a new order introduced from America, who formed lodges far too rapidly and with far too few members. They avowed that they did so as a missionary act, to spread the principles of temperance, but unfortunately often with too small a basis for success. Among the Foresters it was occasionally the case that after a feast had been held in a district a court was founded, because the people in the neighbourhood had observed the banners and decorations, which were very pretty, but such lodges soon

broke up. He also spoke in terms of reprobation of the affiliated orders for women. These were common in Bristol, and were for the most part utterly rotten. Women's societies very seldom succeeded—only, indeed, where they were earning wages, as in the straw plait districts. In such cases he believed that large local clubs formed a better basis for female societies than affiliated orders. How could the system of districts, annual moveable committees, and arbitrations be carried on by women? Above all, he reprobated the meeting of women's clubs in public houses, where he had found young girls sometimes were expected to pay monthly visits in order to pay their subscriptions.

Mr. Ralph P. Hardy said he had never seen the statistics relating to these societies in so convenient a form, or the facts so well grouped together. There was one important point, however, on which he hoped Mr. Neison would afford some information on a future occasion, namely, the statistics of sickness in friendly societies. That was a point upon which Mr. Neison had said nothing. The Manchester Unity of Oddfellows had, on three separate occasions, investigated its sickness experience. The question was, however, he had found, one of great difficulty. He had had occasion lately to investigate the cases of sickness in several societies, and he found that they varied in a most peculiar way. There was no standard by which they could be judged at all, and he came to the conclusion that the personal supervision of the committee had a great deal to do with the sickness that resulted. In a large society he had to do with the rate of sickness was enormous. He suggested to the committee that they might have been mismanaging it, and in a way they admitted it. In another society, if the periods of years were examined, it would be found that the members were sick when young men, then in middle life, and then at the end of life. These were a body of men that were admitted without any medical examination at all, some of them being actually in a state of consumption. Before friendly societies could be worked with real satisfaction to the provident members, the working classes must have their moral feelings a little better cultivated. They must learn that it is a crime to plunder the common fund, and the managers must remember that in this matter they were simply trustees. He hoped that the observations he had made would induce Mr. Neison to consider the sickness question.

Mr. Neison thanked the meeting for the very favourable way in which his paper had been received. As to the question of the number of officials raised by Mr. Lumley, he might mention that each one of the subordinate branches had about a dozen officials, and in some branches they amounted to sixteen or seventeen. This was one great source of the popularity of these institutions. In the Odd Fellows and Foresters there was a good deal of honourable strife on the part of the members to become officials, not one of whom were paid except the secretary, who received from 3*l.* to 10*l.* a-year, a sum altogether out of proportion to the amount of labour the post involved. With regard to the observation of Dr. Balfour

as to the increase of mortality, no doubt by reducing the age of members at initiation the average age of the members would be lessened; but practically he was afraid that although the age of initiation in the Odd Fellows had been reduced from 18 to 16, very few members had joined at the lower age. He had refrained from giving the fuller statistics suggested in the course of the discussion, because his paper would have extended to too great a length. With regard to the statistics of dockyards, he mentioned that the statistics for the customs had recently been published by Dr. Dickson in a pamphlet form with good result. As to the courts out of districts, it was true that some of the courts in the Foresters were not in districts, but the number of these courts was not very large, being under 400 out of the 4,300 courts in the whole order. Referring to the profit from secessions, he thought it would be found that this was not so large as might be supposed, for this reason, that on analysis he found that there was very little difference between the average age at secession and the average age at initiation. In fact there was not more than three years' difference between the two, and there would be found very few members of the order seceding after the age of 45. In answer to the question as to what was meant by the publishing and selling of goods relating to the order, it was just this, all the branches in the order were bound to obtain their stationery, books of account, and any little medals or ribbons the members might indulge in, from the central executive, who supplied them at the small cost of 10 per cent. on the net outlay, and practically the price obtained for these goods more than covered the expenses of central management. He should have been glad to enter into the subject of the different data referred to by Mr. Hardy; but the subject was such a large one that it would require a paper of itself. There was every necessity that matters of excessive sickness should be looked into. In one society with which he was acquainted, he found it was simply impossible to account for the extraordinary rate of sickness in the society, which was composed of agricultural labourers, not subject as a rule to excessive sickness. So far as could be ascertained, not only nine out of every ten were sick, but sick on an average of thirty weeks out of fifty-two. On inquiry he found that these were agricultural labourers, getting a wage of 10*s.* a-week, and were insured for a benefit varying from 8*s.* to 8*s.* 6*d.* After being sick for a short time they were entitled to half of the benefit, which would be 4*s.*, then they obtained 2*s.* 6*d.* from the parish, together with some loaves of bread, which would amount to about 7*s.* a-week, for doing nothing; and as they only get about 9*s.* to 10*s.* by labouring, they thought the better way was to stop at home and sham illness. In conclusion he again thanked the meeting for the manner in which his paper had been received.

On the Recent Economic Progress *of* New Zealand.

By Archibald Hamilton, Esq.

[Read before the Statistical Society, 30th January, 1877.]

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A paper read by me at the British Association in Exeter appears in the Society's *Journal* for September, 1869, vol. xxxii. I therein examined the progress of the colony from its foundation in 1840, until December, 1867; and I now propose to review the period of ten years ending 1875, with some occasional later particulars, for which returns are available.

I.—*Introduction. Peculiar Advantages of the Colony.*

The decade in question is marked by rapid progress in all directions—and the results are well worth the study of political economists, deserving the attentive consideration of capitalists, merchants, and indeed, of all classes; for which unusual facilities exist, in the careful and elaborate statistics published annually by the colonial Government. There must indeed at all times be peculiar interest and sympathy felt in the welfare of New Zealand, inasmuch as it is the most essentially British of all our colonies. Setting aside our tropical possessions—with which no comparison can be instituted—New Zealand has been free from the convict element which affected the settlement of Australia; without difference of race, of language, and of law, as in Canada and the Cape of Good Hope; free also from the taint of slavery which

existed at the Cape, and to which may be traced the difficulties that even now beset our relations with those offshoots from that colony—the Dutch republics in South Africa.

The settlers in New Zealand comprise all classes in the United Kingdom—English, Irish, and Scotch—from the sons and connexions of the peerage and landed gentry, to the agricultural labourer; and from the sons of merchants and manufacturers, to artisans of every kind and degree. It would be difficult therefore to conceive a population more exactly the counterpart of that in the mother country.

Situated between the thirty-fourth and forty-seventh degrees of south latitude, the climate of New Zealand is throughout temperate, and embraces as great a variety as can be found between the north of England and the south of France; it is free from droughts such as occur in Australia and at the Cape, and from frost which retards Canada during four months in each year; while the configuration of the land is singularly adapted for colonisation. Roughly speaking it may be described as a strip of land nearly 1,000 miles long, by 200 miles broad—with a coast line of about 3,000 miles, indented by harbours and creeks—comprising 100,000 square miles, or about 20,000 square miles less than the United Kingdom—abundantly watered by rivers—and intersected by roads, with a system of trunk railways approaching completion; so that a vast and rapidly increasing area of most productive soil has been opened up for settlement and rendered accessible on all sides.

In addition to the gold mines which have been worked during the last twenty years, the geological explorations have disclosed coal fields, iron, and other valuable minerals, on which there will hereafter no doubt be built up an industry, ultimately perhaps to rival our own, even though our productiveness may not yet have reached its highest development. At all events, the advantages just mentioned must secure for New Zealand a destiny such as cannot be surpassed by any of the sister colonies, and this notwithstanding her greater distance from Europe, and comparative isolation. But I have to do with what has been accomplished in New Zealand rather than with her future. It is, however, necessary that I should briefly recapitulate the position of the colony at the commencement of the decade.

II.—*Retrospect.*

The Home Government at the outset established a monopoly in land, constituting themselves, through their representatives, the sole purchasers from the natives. Moreover, the exclusive control of native affairs was jealously reserved, even when in 1852 a representative constitution was conceded to the colonists. The Imperial

Government was actuated no doubt by the purest motives of philanthropy in their policy towards the aborigines, but the result was nevertheless unfortunate. In 1860 the last series of Maori wars commenced; it originated in a dispute as to a Government purchase of land. Hostilities became chronic, and lasted with intervals until 1870, when they gradually and finally died out. Nor is it likely that there will be any further serious disturbances. But in the meanwhile the war had proved so troublesome, as well as resultless and costly to the Imperial Government, that strong efforts were made to be rid of native affairs at all hazards; on the other hand the strain on the colonists was all but ruinous, and they naturally objected to be saddled with native affairs, considering the tangle in which these had become involved.

At length, after prolonged correspondence, and under irresistible pressure from home, the colonists in 1863 reluctantly undertook the management of the Maoris, and have conducted their affairs ever since. They did so "in consideration of the thoroughly efficient aid "which Her Majesty's Government was then affording for the sup- "pression of the native rebellion, and relying on the cordial co-opera- "tion of the Imperial Government for the future." The "aid" then afforded consisted in 10,000 soldiers and a naval brigade; and the "future co-operation" resulted in the gradual withdrawal of the troops from the colony, the last regiment being removed in 1869, and this at a most critical time, when the affairs of the colony, financially as well as politically, were of the gloomiest nature.

The colonists were thus left to fight it out and settle scores with the natives as best they could, a task which they accomplished with unlooked for success. The course adopted was to raise a force of some 2,000 to 3,000 men, specially trained and disciplined for the peculiar warfare, and these, with the aid of friendly native levies, brought the war to a successful termination, reducing it, in fact, from 1870 into a hunt after two rebel chiefs. But to accomplish this, expenditure had to be incurred, to cover which it was deemed necessary to raise a loan of 1,500,000*l*. The credit of the colony, for obvious reasons, being at a low ebb, application was made that the loan should be guaranteed by the Home Government. Under the circumstances this was assuredly a reasonable request, and might have been granted with no cost, or even substantial risk, to the imperial treasury; while the difference between borrowing at 3 per cent. and 6 per cent. would have saved the colonial treasury 45,000*l*. per annum. The request was at first absolutely refused; then came an offer to guarantee half a million, and finally, after a deplorable amount of haggling, the difference was split, and the Imperial Government guaranteed a loan for one million, instead of a million and a half, as originally requested.

But the consequences to the colonists of the attempt to conduct native affairs from Downing Street, did not end with the war. They had already contributed their proportion to costly and mismanaged wars, at first conducted by officers of the Imperial Government, and borne the whole cost of concluding those wars when left to themselves. But they had now in addition to deal with the legacy of a long course of misgovernment, in the serious expense deemed necessary for a re-adjustment of the native policy.

III.—*Native Policy.*

Conceiving that it would be wiser, rather than continue fighting the Maoris, to find employment for the more friendly tribes, the policy was adopted of setting some to make roads and telegraphs through the north island, employing others as armed constabulary, also to assist in road making; and occasionally purchasing land from prudential motives. In short, peace was at first secured by a judicious system of conciliation, and it is now so firmly established, that in parts, where little more than ten years ago a powerful military force could penetrate only with the utmost difficulty and danger, mail coaches now run regularly across the north island in various directions, with as much safety as the amateur teams which in summer ply between Piccadilly and Windsor, or Tunbridge Wells. The necessary outlay has, moreover, been mitigated by the work done, the roads have added greatly to the value of the land which they opened up, and the land purchased from time to time remains as an asset in hand annually increasing in value.

It will be seen from Table I in Appendix, that from 1853 to 30th June, 1876, inclusive, the amount expended for native and defence purposes has amounted to 6,600,000*l.*, viz.:—

	£
Out of revenue	2,017,590
„ loans	4,615,032
Total	6,632,622

To this might be added cumulative interest at 5 per cent. on the amount expended out of loan, which interest has been defrayed out of revenue, to the amount of 2,197,505*l.*

IV.—*Colonial Debt, its Outlay and Comparative Pressure.*

Table II contains a full statement of the public debt, including loans raised by the provinces, together with the annual charge for interest and sinking fund to 30th June, 1876, to which is added a loan for 1,250,000*l.*, raised in London in July last. The particulars are as follow:—

	£
Total debt for which debentures and treasury bills have been issued	18,734,761
Floating debt or liabilities, 30th June, 1876	808,433
As per financial statement 30th June, 1876	19,543,194

The floating debt of 800,000*l.* is covered by the like amount, being the balance of loan guaranteed by the British Government, which remains at the disposal of the colonial treasurer, not having been yet issued to the public.

The annual charge for interest and sinking fund on debentures and treasury bills issued, amounts to 1,015,779*l.*, irrespective of floating debt, which at 5 per cent. would increase the annual charge to 1,056,201*l.*

The population on 31st December, 1875, was 375,856, to which must be added for six months ending 30th June, 1876, on the average of three preceding years, say 16,000, making a total population of 391,856. This is inclusive of 4,800 Chinese, but exclusive of 45,470 Maoris, according to census, 1st March, 1874. The latter contribute largely to the revenue through the customs, and many of them are wealthy. It will be quite safe, therefore, to estimate the whole as equal to a European population of 400,000, and the following calculations are worked out on that basis.

These data give a total debt of 48*l.* 17*s.* 2*d.* per head, and an annual charge of 2*l.* 12*s.* 9*d.* per head. It is to be observed, however, that the sum accrued on the sinking fund to 30th June, 1876, amounted to 1,206,331*l.*, which in reality reduced the public debt to the sum of 18,336,863*l.*, or 45*l.* 16*s.* 10*d.* per head of population.

The sinking fund, with interest thereon as it accrues, is invested in the hands of trustees, specially for the redemption of the various loans to which it appertains.

The year 1869, as I have said, was a time of the deepest gloom in the colony. The Imperial Government had withdrawn from all participation in the war, and there were those who feared that the colonists in the middle or south island might be tempted to follow their example, as the war existed only in the north island. The catastrophe which must have ensued, in such an event, was averted, in the first place by the better success which began to attend the war, and finally by the financial policy which was brought forward in 1870. It was thereby proposed to raise loans to the amount of ten millions, to be expended in developing the resources of the colony by means of immigration, railways, roads, and other public works. This policy was adopted with general enthusiasm, and as I shall have occasion to show, it has so far been attended

with extraordinary success. It has been the means of completely pacifying the natives. It has indissolubly knit together the north and south islands, and has laid broad and deep the foundations of solid prosperity hereafter.

A wide distinction is therefore to be drawn between the loans raised prior to 1870 and subsequently. It appears from the financial statement of June, 1870, that the debt then stood thus:—

	£
General Government of the colony	4,347,866
Provincial debts	3,208,350
	7,556,216

and on reference to Table I it will be observed that out of 4,300,000*l.* no less than 3,300,000*l.* was expended for native and defence purposes, or in other words unproductively on war. But subsequently to 1870 the loans have been principally expended on immigration, public works, and the purchase of land.

The amounts under the chief heads of expenditure have been as follows to 30th June, 1876:—

	£
On railways	6,198,272
„ roads and bridges	700,434
„ water races to develop mines	280,920
„ public buildings and other improvements	299,250
„ telegraphs	228,284
„ land purchases	445,404
„ immigration	1,113,490
Total	9,266,054

I shall presently comment in detail on some of the foregoing items.

There can be no doubt that this expenditure, however desirable and beneficial it may ultimately prove, has nevertheless been pushed forward too quickly. The original intention in 1870 was to raise 10 millions sterling, to be expended in the course of ten years; and a general system of trunk railways and roads was then laid down. But these plans have not been adhered to, swing, I believe, chiefly if not altogether to the pressure of the provincial Governments; the railways were in consequence commenced fractionally and not upon a general system. The colony has thus been committed to an amount of railway expenditure at once, which it would have been more judicious to spread over a period at least twice as long; so that instead of a number of lines all under construction at the same time, according to the demands of the various provinces, they might have been finished successively, and each as completed have yielded a return. According to the

latest returns, there are at present no less than twelve lines in course of construction throughout the colony, besides eight more under survey.

The provincial Governments and legislatures were the means by which New Zealand was colonised simultaneously at various points, instead of spreading from one centre; and were doubtless beneficial in the early days of the colony in developing local works and attracting immigrants, and this at a time when there was little communication between the provinces; but for many years their influence has been mischievous, owing to constant conflict with the central Government, especially on points of finance; each province spending in excess of income and scrambling for its share of public loans, as well as contending for local interests in the narrowest spirit, and by means of caballing, or "log rolling," putting a pressure on the general Government, which the latter could not always resist. The consequence has been the same with all public works as with railways, that too much expenditure has been undertaken at a time, and the necessity of continual borrowing has arisen, to some extent affecting the credit of the colony. It is satisfactory, therefore, to know that this unfortunate state of affairs has been terminated by the abolition of the provincial legislatures, so that the finances, public lands, and public works, together with the entire administration of the colony, will be carried on by one central Government; while purely local affairs will be managed by municipal and county authorities.

Whatever may have been the cause, the fact, however, remains that the debt of New Zealand stood thus, excluding floating debt in either case:—

	Debt.	Per Head.	Annual Charge.	Per Head.
	£	£ *s.* *d.*	£	£ *s.* *d.*
30th June, 1870.....	7,500,000	29 12 1	474,000	1 17 5
„ '76.....	18,700,000	46 15 –	1,015,000	2 10 9
Increase	—	59 per cnt.	—	34 per cnt.

But the pressure of the public debt on a community is not to be estimated by the simple process of counting heads. Regard must also be had to the wealth and resources of the population. It would be easy to give examples in support of this proposition; but it will be sufficient for my purpose to cite the experience of the United Kingdom, by contrasting the debt after the close of the great war, or say the year 1817 with 1876:—

	Debt.	Per Head.	Annual Charge.	Per Head.
	£	£ *s.* *d.*	£	£ *s.* *d.*
1817.....	840,850,000	42 8 9	32,000,000	1 12 4
'75–76	777,000,000	23 9 6	27,400,000	– 16 6

No one can doubt that with our increased wealth and resources we could now bear a debt of 42*l.* 8*s.* 9*d.* per head with a charge of 1*l.* 12*s.* 4*d.* per head, much more easily than our predecessors did in 1817; nor would it hinder our progress any more than it did theirs. The enormous growth of our national debt was, moreover, occasioned entirely by war expenditure, whereas, as has been shown above, a large proportion of the debt of New Zealand exists in the form of reproductive works; besides which, there are other discrepancies between the national and colonial debts. Consideration is also due to the fact that our national debt was borrowed at home, whereas the New Zealand loans have been raised in the United Kingdom.

It would be satisfactory, were it possible, accurately to contrast the aggregate income of New Zealand and the United Kingdom, as well as the public debt and annual charge per head of the population in each country. Sir Julius Vogel in 1873 formed an estimate of the gross income of the colonists in comparison with Mr. Dudley Baxter's estimate for the United Kingdom in 1870. Omitting the debt incurred for railways and other reproductive works in the colony, also of provincial debts specially secured on the Crown lands, so as to arrive at a fair comparison, the results were worked out as follows, viz.:—

	Per cnt.
New Zealand, percentage of debt charge on aggregate income.....	1·2
United Kingdom „	2·8

But both these results are confessedly "founded on estimates and "calculations based on the best available data, and are only stated "as probable approximations." Nevertheless we are not without the means of instituting trustworthy comparisons as to the well being of the New Zealanders.

So far, indeed, as the working classes are concerned, an examination of Table III as to wages and the cost of living, will show that they are much better off than at home, as the wages are higher in the colony, while the cost of provisions is less.

Again, it may be safely inferred that the aggregate income of the colonists is more per head than in the United Kingdom, from the fact that the proportion of bread winners to the total population is greater—the proportion of males is 57 per cent. as against

49 per cent. at home; the proportion of men in the prime of life is much greater in the colony, and there are no paupers.

The produce exported from the colony will form another test, as the exports in one form or another, whether as wages, profits, or rent, constitute a definite proportion of the income of the entire population, and the exports moreover furnish the means by which necessaries and supplies of all sorts are procured from other countries. The following table shows the average exports of produce for eight years, ending 1874, from the undermentioned colonies:—

	New Zealand.	Victoria.	New South Wales.*
	£	£	£
Gold	2,216,826	5,117,790	294,637
Wool	1,981,320	4,115,823	3,099,728
Agricultural produce	175,332	106,427	228,116
Other produce	412,948	1,341,568	1,929,137
	4,786,426	10,681,608	5,551,618
	£ s. d.	£ s. d.	£ s. d.
Per head, exclusive of Maoris	18 2 1	14 9 7	10 16 4
Per head, Maoris and Chinese, estimated as per p. 94	17 11 5		

* These are the exports seaward from New South Wales, irrespective of a considerable annual value of produce sent overland to Victoria and South Australia.

During the same period the exports from Canada (Quebec and Ontario) have averaged 11,764,130*l.*, or 4*l.* per head, and the average exports of British produce from the United Kingdom was 215,528,281*l.*, or 6*l.* 17*s.* 5*d.* per head.

In contrasting the indebtedness of New Zealand with that of the United Kingdom, we must add to the national debt the cost of railways, and capitalise the poor law rates, which do not exist in the colony, thus:—

United Kingdom.

	£
National debt as it stood, 1875-76	777,000,000
Expended on the poor, average for ten years ending Lady-day, 1875, 9,216,053*l.*, capitalised at 4 per cent.	230,000,000
Railways, 16,664 miles open, December, 1875	630,000,000
	1,637,000,000

or 49*l.* 12*s.* 1*d.* per head for United Kingdom as against 48*l.* 17*s.* 2*d.* per head for New Zealand.

Or the question may be stated in another form. Against the colonial debt of 19,544,000*l.*, we have to place on the credit side the value of the following assets in hand, assuming the railways, roads, and public works, to be worth their cost, viz. :—

New Zealand.

	£
Sinking fund, invested specially by trustees	1,200,000
Railways, expended thereon	6,200,000
Roads, bridges, water courses, and other public works	1,500,000
Crown lands, 34 millions of acres, producing in the last five years an average income of 820,000*l.* per annum, valued at 7*s.* 6*d.* per acre (further particulars, p. 106)	12,750,000
	21,650,000

So that in point of fact the public debt of the colony is amply covered by sound public assets, independently altogether of the ordinary taxable resources of the community, which for its numbers is one of the wealthiest and most thriving in the world.

I shall now proceed to examine the progress of New Zealand in population, revenue, expenditure, and the main branches of industry, in order to form a conclusion as to whether the increase of the debt since 1870 is likely to retard the prospects of the colony, admitting freely that the expenditure has for the time been excessive.

In stating the increase which has taken place under the different heads during the ten years ending 1875, I have, except where otherwise mentioned, taken the average of the first two years of the decade and compared them with the average of the last two years, so as to avoid error from exceptional years. I have also contrasted the first five years with the last five years of the decade.

V.—*Revenue.*

The receipts come under two heads, ordinary and territorial; the former consisting of customs duties in the proportion of three-fifths of the whole; and a statement of the latest year's revenue will be found in Table IV, showing the other receipts in detail. The territorial revenue is derived almost wholly from sales of crown lands, leases, &c. The following are the returns for the ten years :—

[000's omitted.]

	Ordinary.	Territorial.	Total.
	£	£	£
1866	1,086,	776,	1,862,
'67	1,226,	562,	1,788,
'68	1,196,	425,	1,621,
'69	1,026,	382,	1,408,
'70	960,	328,	1,288,
1871	921,	378,	1,299,
'72	1,006,	619,	1,625,
'73	1,487,	1,266,	2,753,
'74	1,873,	1,151,	3,024,
'75	2,047,	689,	2,736,
Percentage increase—			
1871-75 on 1866-70	34	66	44
'74-75 „ '66-67	70	38	60

The ordinary revenue amounts to 5*l.* 2*s.* 4*d.* per head of population.

The territorial revenue fluctuates from year to year, depending on the price of wool and grain, and other circumstances, and includes only the crown lands sold and leased by the Government, but does not indicate the progress of settlement on land purchased by individuals from the natives, who own the bulk of the north island, and from whom a large extent of land is purchased and leased annually.

VI.—*Expenditure.*

I have been unable to analyse the expenditure, not having before me the means of doing so properly. The public accounts are extremely complicated, as between the colonial and provincial Governments, as well as the special funds, trust funds, and land fund—including transfers, advances, and repayments—so that without fuller details than I possess, it is impossible to distinguish, with any approach to accuracy, which items ought to be charged to capital or which to income. But as my object is more especially to show the progress of the colony during the last ten years, it will, at all events in part, be attained by exhibiting the charges on the consolidated fund for each year, distinguishing ordinary charges, or those which represent the expense of carrying on the Government, from payments for interest, sinking fund, expenses of loans, &c.:—

Charges on Consolidated Fund.

[000's omitted.]

	General Charges.	Charges of the Public Debt.	Total.
	£	£	£
1866	620,	158,	778,
'67	730,	334,	1,064,
'68	463,	258,	721,
'69	732,	525,	1,257,
'70	883,	644,	1,527,
1871	586,	294,	880,
'72	649,	509,	1,158,
'73	691,	576,	1,267,
'74	807,	840,	1,647,
'75	1,049,	826,	1,875,
Percentage increase—			
1871-75 on 1866-70	10	58	28
'74-75 „ '66-67	38	238	91

VII.—*Railways and Roads.*

As already stated, the amount expended on these has been 6,198,000*l.*, with the following results, viz. :—

1873	145 miles open;	434 miles being made.
'74	209 „	621 „
'75	542 „	464 „

The latest estimate of earnings on the portions of lines now being worked is 445,000*l.* for the year (including the Canterbury and Otago lines), and it is calculated that this will yield about 3 per cent. on their cost. But as the system becomes completed, there is every reason to believe that the earnings will cover the interest of capital expended. This expectation is justified by the fact that the railways (with one exception) are made on the three feet six inches gauge, and the cost will not therefore exceed 6,000*l.* per mile.

The value of the railways cannot, however, be estimated solely by the returns yielded on the traffic, as it is obvious that railways open up the country through which they pass, even more effectually than roads, and increase the value of property, public and private, many times beyond the cost of construction; and it should be borne in mind that the crown lands share in this enhanced value to the full extent.

Roads.

The general Government from June, 1869, to June, 1876, expended on roads as follows, viz. :—

		£
In the north island	1,832 miles, cost	491,636
„ middle „	270 „	198,880
	2,102 „	690,516

In 1875 there were altogether 314 road districts throughout the colony, but the returns are incomplete; out of them 265 had an estimated area of 23,800,000 acres, and 290 districts had a total income of 268,076*l.*, viz.:—

	£
From Government	168,552
„ rates	61,426
„ other sources.....	38,098
	268,076
Expenditure in 1875 was	318,620

the difference being accounted for by balances brought and carried forward.

VIII.—*Telegraphs.*

The sum of 228,300*l.* has been expended on telegraphs from 1865 to 30th June, 1876; the length opened is 3,156 miles, the number of messages in 1875 was close upon one million, and the receipts have been as follows:—

	£
1866	9,115
'67	14,295
'68	26,225
'69	32,649
'70	27,425
'71	37,203
'72	44,669
'73	55,195
'74	63,323
'75	74,420

IX.—*Live Stock.*

The numbers have been correctly ascertained only in the years when the census was taken, viz.:—

	Horses.	Cattle.	Sheep.	Pigs.
1867.....	65,715	312,835	8,418,579	115,104
'71.....	81,028	436,592	9,700,629	151,460
'74.....	99,261	494,113	11,674,863	123,741
Percentage increase—				
1874 on 1871	23	18	20	18 (decrease)
'74 „ '67	51	58	39	8 (increase)

X.—*Wool.*

Above three-fifths value of the total exports from the colony consist in wool, and the rate of increase in sheep above stated does not correspond with the percentage increase in the weight or value of wool exported during ten years, viz. :—

[000's omitted.]

	Pounds.	Value.
	lbs.	£
1866	22,811,	1,354,
'67	27,153,	1,581,
'68	28,875,	1,517,
'69	27,766,	1,371,
'70	37,040,	1,704,
1871	37,794,	1,606,
'72	41,887,	2,538,
'73	41,535,	2,702,
'74	46,849,	2,835,
'75	54,402,	3,398,
Percentage increase—		
1871-75 on 1866-70	55	73
'74-75 „ '66-67	103	112

The reason of the increase in weight and value being greater than the increase in the number of sheep, is due to three causes :— 1st, to improvement of the flocks by the ordinary process of culling ; 2nd, to crossing the breed ; and, 3rd, to improved pasture, by fencing and laying down English perennial grasses.

XI.—*Land under Cultivation.*

I subjoin the returns for eight years ending 1876 of the acreage under grain of all kinds, also under green and other crops and sown grasses, together with land broken up and prepared for cultivation, but not under crop :—

[000's omitted.]

To February in each Year.	Acres Broken up.	Under Grain Crop.	Green and Other Crops.	Hay and Sown Grasses.	Total.
1869	96,	165,	20,	528,	809,
'70	97,	214,	37,	676,	1,024,
'71	116,	223,	25,	810,	1,174,
'72	96,	261,	45,	854,	1,256,
1873	120,	244,	58,	1,028,	1,450,
'74	148,	264,	58,	1,225,	1,695,
'75	155,	279,	74,	1,476,	1,984,
'76	146,	287,	124,	1,869,	2,426,
	974,	1,937,	441,	8,466,	11,818,
Increase per cent.—					
1873-76 on 1869-72	40	24	147	95	78
'75-76 „ '69-70	56	50	247	177	141

It is to be observed that land which has been cultivated, preparatory to its being laid down in sown grasses, is increased in value 8*l.* to 10*l.* per acre. I am unable, however, to state how much in the above table has been so prepared, and how many acres have been merely superficially sown without prior cultivation; but the increased area under the various stages of culture, together with fencing, buildings, &c., represent an addition to the value of the landed property of the colony of at least 1,500,000*l.* in the year 1875-6.

In addition to growing cereals enough for home consumption, the decennial returns show a steady increase in the exports of grain and flour, which for the year 1874 reached a total of more than 300,000*l.*; this source of wealth is, however, as yet in its infancy.

XII.—*Exports.*

The produce of New Zealand during ten years has been exported to the following value :—

[000's omitted.]

	Gold.	Other Produce.	Total.
	£	£	£
1866	2,845,	1,552,	4,397,
'67	2,700,	1,779,	4,479,
'68	2,504,	1,764,	4,268,
'69	2,363,	1,727,	4,090,
'70	2,158,	2,387,	4,545,
1871	2,788,	2,384,	5,172,
'72	1,731,	3,376,	5,107,
'73	1,987,	3,491,	5,478,
'74	1,505,	3,647,	5,152,
'75	1,408,	4,068,	5,476,
Percentage increase—			
1871-75 on 1866-70	25 (decrease)	84	21
'74-75 „ '66-67	47 („)	132	20

XIII.—*Imports.*

I give the figures for the ten years, but fear no sound inference can be drawn from them as to the progress of the colony, the imports during the latter years having been obviously augmented by the shipment of railway plant and material, the produce of loans raised at home. I give the returns, distinguishing between consumable and non-consumable articles, as drawn up, and where given, by the colonial authorities :—

[000's omitted.]

	Consumable.	Non-Consumable.	Total.
	£	£	£
1866	—	—	5,895,
'67	4,179,	1,166,	5,345,
'68	3,720,	1,266,	4,986,
'69	3,901,	1,075,	4,976,
'70	3,480,	1,159,	4,639,
1871	3,082,	996,	4,078,
'72	3,702,	1,441,	5,143,
'73	4,340,	2,125,	6,465,
'74	5,178,	2,944,	8,122,
'75	—	—	8,029,

It will be seen that the imports considerably exceed the exports in value; the difference is, no doubt, in part due to the capital annually transferred by individuals from this country for investment in the colony. In order to arrive at an estimate of the sum total of these operations, I have obtained from the five principal banks connected with the colony returns of their drafts and credits, issued on New Zealand, during the last ten years, and have compiled therefrom the following results:—*

	£		£
1866		1871	
'67		'72	
'68		'73	
'69		'74	
'70		'75	
		'76	

and I may further add that the total amount secured by mortgage in the colony under the Land Transfer Act for the:—

	£
Year ended 30th June, 1876, was	1,755,000
Less paid off during same time	359,000
Balance	1,396,000

a considerable portion of which would be British capital.

XIV.—*Savings Banks.*

Perhaps the best indication of the prosperity of the working classes will be found in the number of depositors and average amount of deposits; these have been:—

* I have, unfortunately, been unable to obtain these particulars, although I had devised a means by which the information might have been furnished, without disclosure of trade secrets; but one of the banks declined, without which the others would have been useless.

	Depositors.	Balances 31st December.	Average Deposits.
		£	£
1866	4,513	91,863	20
'67	6,579	156,855	24
'68	8,121	243,615	30
'69	10,103	320,383	32
'70	12,137	388,804	32
1871	14,275	454,966	32
'72	17,289	597,002	35
'73	21,807	812,144	37
'74	27,215	943,753	35
'75	30,310	897,326	30
Average	15,234	490,671	32

In 1875 the proportion of depositors to population was 80 per 1,000.

XV.—*Municipalities.*

The number of municipalities in 1875 was thirty-four, with an estimated population of 109,300.

The aggregate rateable annual value was 1,068,000*l.*, and the annual revenue from rates 141,200*l.*, equal to 2*s.* 8*d.* in the pound.

XVI.—*Crown Lands.*

Since the foundation of the colony the particulars of land sold and remaining on hand are as follows :—

	Acres.
Sold or otherwise disposed of	13,000,000
Remaining on hand	34,000,000

The sales in 1875 amounted to 318,681 acres, and produced 448,697*l.*, at the following prices, viz. :—

	s.	*d.*		£	*s.*	*d.*	
Town lots from	30	–	to	180	–	–	per acre
Suburban lots from	27	6	„	7	13	9	„
Country „	10	–	„	2	–	–	„

Hitherto the upset prices have varied from 10*s.* to 40*s.* per acre in the different provinces, with varying conditions. The preceding valuation at 7*s.* 6*d.* per acre all round is therefore moderate.

The opening of roads and railways renders the crown lands year by year more valuable, and the policy has always been to fix such an upset price as will encourage purchases for the purposes of settlement, and not for speculation or land jobbing.

XVII.—*Land Transfers.*

The transfer of lands and the registration of deeds is conducted on the system introduced by Sir Robert Torrens in South Australia, with some necessary modifications in detail. No difficulty is found in transferring land by means of simple and inexpensive forms, which can be filled up by anyone of ordinary intelligence, while mortgages and settlements are recorded with equal facility. As often as required, the court clears up past encumbrances and grants a new title. The last report of the Registrar-General of Land for the year ending June, 1876, gives particulars of transactions, of which the following is a summary :—

	Number.	Value.
		£
Applications for registration	1,259	742,245
Transfers	4,504	904,655
Crown grants	2,268	—
Mortgages	2,819	1,755,115
„ paid off	—	359,000
	10,850	—

These transactions having been carried out with a celerity, economy, and security which would show that the colonists are, at all events in this respect, infinitely better off than their lawyer-ridden countrymen at home.

The fees paid to Government for the above-mentioned 10,850 transactions amounted to 12,500*l.*, or an average of 1*l.* 3*s.* for each operation. In addition to which a charge is made of one halfpenny in the pound on the value of all land brought under the operation of the Act, in consideration of which the Government guarantees the titles. No claim has yet been made, and an assurance fund has been formed to meet any that may arise.

Besides the above, the registration of deeds has produced 15,733*l.* in fees, but I have not ascertained the number of operations.

XVIII.—*Maoris.*

No reliable statistics have been obtained as to their numbers, nor as to whether they are increasing or decreasing—the returns of 1858 and 1867 were avowedly mere approximations—though by the aid of the native constabulary the return for 1874 may approach accuracy and afford a basis for comparison hereafter. I give the returns for what they are worth, viz. :—

	Males.	Females.	Children under 14.	Total.
1858	31,677	24,303	—	56,049
'67	15,432	12,708	10,323	38,535
'74	24,763	20,707	—	45,470

In 1874 the numbers in the south island were 1,932, leaving 43,538 for the north island.

The disparity between the sexes originated in the habit which prevailed of female infanticide at a time when there were perpetual intertribal wars, but it has long since ceased.

The land courts established in 1863-64 have worked admirably in preventing disputes, and it is no exaggeration to say that they command the confidence of the Maoris, if possible, more entirely than that of the colonists. The courts are assisted by native assessors, and the proceedings are never called in question.

The tribal ownership of land is fast disappearing, and is in fact the only remains of communism among the natives. Each family cultivates their own patch of land and disposes of the produce as they please, although the land itself vests in the tribe until split up and individualised by the land courts.

This is done on application by the tribe. The title having been first proved and the land surveyed, crown grants are issued and registered devolving the title from the tribe to individuals, who are then enabled to sell or hold their allotments as they please. A great deal of the lands to the north of Auckland are held by the natives under crown grants, and the same practice is spreading to other parts of the island. The natives still possess about 20 millions of acres in the north island, and are turning their attention to agriculture as well as to rearing sheep and cattle.

But the most encouraging circumstance connected with the Maoris is the desire to have their children educated and taught English. In the year 1875 there were sixty-four schools for the purpose, and 1,600 pupils. On the whole, there are gratifying signs of advancement in civilisation; and the notion that they are a doomed race seems to be no longer entertained by those who are best acquainted with them, and most capable of judging; at all events, every means that justice and enlightened policy can suggest will be employed to preserve this interesting people from the fate which has heretofore befallen aboriginal races in contact with the European.

XIX.—*Population, Birth Places, and Occupations.*

The following are the numbers for the ten years ending 31st December, 1875, exclusive of Maoris:—

	Males.	Percentage of Total Population.	Females.	Percentage of Total Population.	Total.
1866	125,080	61·3	79,034	38·7	204,114
'67	131,929		86,739		218,668
'68	134,621		91,997		226,618
'69	140,112		97,137		237,249
'70	145,732		102,668		248,400
1871	156,431		110,555		266,986
'72	162,404		117,156		279,560
'73	170,406		125,540		295,946
'74	194,349		147,511		341,860
'75	213,294	56·8	162,562	43·2	375,856
Increase per cent.—					
1871-75 on 1866-70	32	—	45	—	38
'74-75 „ '66-67	58	—	87	—	70

For the foregoing calculations the population is estimated at 400,000, 30th June, 1876, as explained above (p. 94).

Birth Places.

By the census of March, 1874, the proportions were as follows:—

	Per cnt.
New Zealand	40·94
Australian colonies	4·54
England and Wales	25·38
Scotland	12·83
Ireland	10·10
Other British possessions	1·02
China	1·61
Germany	0·94
Other countries and various	2·64
	100·00

of 4,800 Chinese, 3,600 were settled in Otago and 900 in Westland.

Occupations.

The census of March, 1874, gives elaborate details, from which I take the following summary of the proportions per cent. of the whole population as well as 48,927 persons then at the gold fields:—

	Whole Population.	Population at Gold Fields.
	Per cnt.	Per cnt.
Government employés	0·83	0·42
Learned professions, literature, art, and science	1·34	0·83
Domestic offices, wives, mothers, children, &c.	57·99	46·14
Entertaining and personal offices for man	4·16	3·50
Commercial, and owners of houses	1·71	1·64
Conveyance of men, animals, goods, and messages	2·76	1·63
Agricultural	11·56	6·16
Mechanical	3·49	1·97
Working and dealing in textile fabrics, dress, and in fibrous materials	2·40	1·51
Working and dealing in food and drinks	1·49	1·64
Working and dealing in animal and vegetable substances	1·05	0·80
Working and dealing in minerals	7·11	31·47
Labourers (undefined) and others	3·24	1·80
Persons of property and rank	0·12	0·03
Non-productive	0·75	0·46
	100·00	100·00

XX.—*Immigration and Emigration.*

The following table shows the balance in favour of the colony during ten years; the numbers are of course included in the population returns above given:—

	Immigration.	Emigration.	Excess of Immigration.	Assisted.
1866	14,893	7,294	7,599	Not ascertained.
'67	11,126	6,267	4,859	
'68	8,723	7,863	860	
'69	8,903	5,262	3,641	
'70	9,124	5,547	3,577	
1871	10,083	5,297	4,786	
'72	10,725	5,752	4,973	4,436
'73	13,572	4,761	8,811	8,754
'74	43,965	5,859	38,106	32,118
'75	31,737	6,467	25,270	20,370

showing a total gain in ten years of 102,482, and of these 57,704 were males and 44,778 females.

There must at all times and from all colonies, as well as from the United States, be an emigration more or less considerable according to circumstances; it must not, however, be concluded that it is the actual immigrant who leaves the colony soon after arrival, but rather that it is merely the natural ebb and flow of population in new countries. I am informed that henceforth a larger proportion of free passages will be granted to people in this country who

are recommended by friends and relatives in the colony, and this will still further tend to secure the actual immigrants remaining in the colony.

It has been asserted that the expenditure on immigration has afforded the means of obtaining free passages as far as New Zealand to some, whose real destination may have been one or other of the Australian colonies. The returns prove this assertion to be groundless. The tide has during the last ten years set rather towards, than from New Zealand. In the year 1875 the number of immigrants with free passages amounted to 20,370, while the unassisted immigrants numbered 11,367, viz.:—

	Australia.	United Kingdom.	Other Places.	Total.
Immigrants (unassisted) from	6,328	3,444	1,595	11,367
Emigrants.....	4,340	799	1,328	6,467
In favour of New Zealand.....	1,988	2,645	267	4,900

But a still more conclusive proof will be to take the excess of immigration over emigration during ten years, ending December, 1875:—

	British Colonies.	United Kingdom.	Other Places.	Total.
Immigrants from.....	59,629	94,263	9,049	162,941
Emigrants to	47,740	6,401	6,228	60,369
In favour of New Zealand....	11,889	87,862	2,821	102,572
Of these were males	7,320	48,711	1,727	57,758
,, females.....	4,569	39,151	1,094	44,814

The value of an immigrant to the community has been estimated in the United States at 166*l.* 13*s.* 4*d.* each, and they have been computed to be worth 200*l.* in New Zealand. How these conclusions are arrived at I am unable to say, but this much is certain, that they cost the colony nearly 20*l.* each, when landed and forwarded to the interior. Free passages have been granted to December, 1876, to about 80,000 of all ages, and (as stated above) the sum of 1,100,000*l.* has been expended on immigration, with excellent results as regards the prosperity of the colony.

XXI.—*Vital Statistics.*

The great disparity between the number of males and females in New Zealand must not be lost sight of, in considering the various

features of its vital statistics. In England, the males number about 49 per cent., and the females about 51 per cent. of the total population. In the colony in December, 1875, the males were 56·8, the females 43·2 per cent., but the disparity is annually decreasing.

The following is the Proportion of Marriages and Deaths to the Living Population for the Ten Years 1866-75.

Year.	Estimated Mean Population of New Zealand.	Births, Marriages, and Deaths.					
		Numerical.			Proportion to every 1,000 of Population.		
		Births.	Marriages.	Deaths.	Births.	Marriages.	Deaths.
1866	197,360	8,466	2,038	2,540	42·89	10·32	12·86
'67	211,391	8,918	2,050	2,702	42·18	9·69	12·78
'68	222,825	9,391	2,085	2,662	42·14	9·35	11·94
'69	231,934	9,718	1,931	2,721	41·90	8·32	11·73
'70	242,824	10,277	1,851	2,703	42·32	7·62	11·13
1871	260,630	10,592	1,864	2,642	40·64	7·15	10·13
'72	273,273	10,795	1,873	3,194	39·50	6·85	11·68
'73	287,752	11,222	2,276	3,645	38·99	7·90	12·66
'74	320,687	12,844	2,828	4,161	40·05	8·81	12·97
'75	358,858	14,438	3,209	5,712	40·23	8·94	15·92
Increase per cent.—							
1871-75 on 1866-70	—	28	21	45	—	—	—
'74-75 „ '66-67	—	57	47	88	—	—	—

The birth, marriage, and death-rates in England are respectively 35, 17, and 24 per 1,000, but a fair comparison cannot be made between them and the similar rates for New Zealand, as the ages of the two populations must differ very widely. The colony is so young that her population has not had time to mature, and to possess its due share of aged people to swell the deaths, while the large immigration consists principally of persons in the prime of life and children. The same causes account for the high birth-rate, which, however, has a downward tendency.

For the reasons which I have mentioned, a comparison between the death-rates at all ages and from all causes in England and New Zealand would obviously not prove of any use in measuring the comparative salubrity of the two climates.

The mortality in New Zealand during the year 1875 was exceptionally heavy, and exceeded the rate of the preceding year by about 3 per 1,000. The Registrar-General in his report remarks that "the increase appears to have been general in all classes of "disease. While the proportion of zymotic disease as a whole was "slightly increased, the proportion of deaths from miasmatic

"diseases was rather less. Measles in 1875 was epidemic in "nearly all the provinces." In the appendix will be found two tables, the two last columns of which give the percentages of deaths from all causes in the colony in 1875, and those in England during the ten years 1861-70, for males and females. The most striking points in these tables are the excessive mortality from zymotic disease, and the lightness of the rates from phthisis in New Zealand as compared with England:—

	Males.		Females.	
	New Zealand.	England.	New Zealand.	England.
Zymotic disease	26·3	20·8	35·5	21·7
Phthisis.....	6·5	10·8	5·1	11·7

The towns of the colony are responsible for much of the excessive mortality from zymotic disease. Thus 32·7 per cent. of the whole of the deaths in the seven towns of Auckland, Thames, Wellington, Nelson, Christchurch, Dunedin, and Hokitika, resulted from zymotic disease, while in the rest of the colony only 28·7 per cent. of the total deaths were attributable to this class. Much of the zymotic disease throughout the country may be ascribed to inattention to sanitary conditions, and this no doubt is greatly intensified in the towns.

The comparison between the proportion of deaths from phthisis in New Zealand and England is very favourable to the colony, notwithstanding the large proportion of her population which is passing through the ages when that disease is most liable to show itself.

XXII.—*Education.*

By the census, March 1874, it was ascertained that of the European population 68 per cent. could read and write, 8 per cent. could read only, and 24 per cent. could not read.

In the month of December, 1875, the return of schools is as follows:—

Description of Schools.	Number of Schools.	Number of Scholars.		
		Males.	Females.	Total.
Common schools, receiving Government aid.....	599	24,970	20,592	45,562
Superior schools, receiving Government aid.	4	428	170	598
Private schools, not receiving Government aid.....	182	3,206	4,110	7,316
Total	785	28,604	24,872	53,476

These schools employed 1,605 teachers, viz., 740 males and 865 females.

The ages of the pupils in December, 1875, were :—

Under 5 years	779
From 5 to 15 years	51,902
15 years and upwards	795
	53,476

But the estimated number of children from 5 to 15 years of age was 90,700—of whom about 8,500 may be reckoned as being educated at home, more or less imperfectly; there would thus remain about 30,300 children at from 5 to 15 years of age who were not receiving any education whatever. This will, however, speedily be remedied by measures recently enacted.

The following is a statement of the income for public school purposes, exclusive of payments for children at private schools and the Auckland Grammar School, which latter is partly endowed by Government lands, viz. :—

	£
Rates	36,004
School fees	25,598
Other sources	4,910
Government grants in aid	111,420
Total receipts for year 1875	177,932

XXIII.—*Conclusion.*

I have summarised the facts under the proper heads in Table V, and they seem to show conclusively, notwithstanding the rapidity with which the debt has of late years been increased, that there is no reason to fear the liabilities have outrun either the public or private resources of the colony. It will be seen that the annual charge of the debt per head of the population has increased 34 per cent. since 1870; but the property and income of the population have likewise increased, and in a very much greater ratio. For example, it will also be seen from Table V, that from June, 1870, the increase from three sources alone, viz., exports, live stock, and land under cultivation—is estimated at 54*l.* 19*s.* 2*d.*, equal to 12*l.* 3*s.* 10*d.* per head per annum, independently of produce raised for home consumption and all other sources of income; or deducting 3*s.* 10*d.* per head for interest on the increase of capital borrowed by individuals during the five years—net 12*l.* Whereas during the same period the debt charge has increased only 13*s.* 4*d.* per head per annum.

Nevertheless I have not concealed my opinion that the credit of the colony has been too freely drawn upon during the past five years, and I am aware that this opinion has prevailed in financial circles. It cannot, indeed, be denied that a feeling of uneasiness began to prevail, with the usual want of discrimination, following upon the difficulties of Turkish, Egyptian, Peruvian, and other foreign debtors. Though from what has been set forth above, it will be seen that it has not been the resources of New Zealand which have been exceeded, but the disposition of investors at home to absorb the loans, the public not being aware how ample is the security afforded by the colony. Loan after loan has been brought out, and the market has been over supplied with New Zealand bonds. Before the capitalists who took up one loan had been able to place it with the investing public, another loan has followed, at a lower price, and prejudiced the previous operation. But all this has no bearing upon the soundness of the security; though I trust it may prove a timely warning to the Government of New Zealand that they must moderate their expenditure, even upon works of the greatest ultimate advantage to the colony, and not suffer their zeal for developing its resources to outrun their power of borrowing on fair terms in the London money market.

APPENDIX.

TABLE I.—*Statement showing the Sums Expended out of Revenue and Loan respectively, during each Financial Year from* 1852 *to* 1876, *for Native and Defence Purposes.*

Financial Year.	Expenditure out of Revenue.			Expenditure out of Loan.			Total.
	Native.	Defence.	Total.	Native.	Defence.	Total.	
	£	£	£	£	£	£	£
1853	17,675	—	17,675	3,920	—	3,920	21,595
'53–54	42,301	—	42,301	1,941	—	1,941	44,242
'54–55	46,482	25	46,507	—	381	381	46,888
'55–56	21,039	—	21,039	707	—	707	21,746
'56–57	10,988	25	11,013	26,662	—	26,662	37,675
'57–58	11,225	3,085	14,310	48,069	—	48,069	62,379
'58–59	12,276	4,552	16,828	11,097	—	11,097	27,925
'59–60	7,641	7,855	15,496	10,473	21,299	31,772	47,268
1860–61	16,228	7,849	24,077	9,302	82,932	92,234	116,311
'61–62	25,315	7,080	32,395	16,015	46,698	62,713	95,108
'62–63	57,022	10,435	67,457	7,580	193,247	200,827	268,284
'63–64	52,599	26,967	79,566	16,586	801,307	817,893	897,469
'64–65	60,291	29,094	89,385	600	803,701	804,301	893,686
'65–66	48,636	28,993	77,629	2,525	417,374	419,899	497,528
'66–67	34,132	114,390	148,522	645	235,997	236,642	385,164
'67–68	24,316	23,217	47,533	—	486,234	486,234	533,767
'68–69	38,124	227,417	265,541	—	80,967	80,967	346,508
'69–70	39,486	305,963	345,449	—	19,002	19,002	364,456
1870–71	51,659	88,684	140,343	230	173,098	173,328	313,671
'71–72	48,644	40,071	88,715	49,434	160,000	209,434	298,149
'72–73	54,581	36,558	91,139	60,667	161,650	222,317	313,456
'73–74	53,170	25,873	79,043	91,386	166,735	258,121	337,164
'74–75	42,117	65,000	107,117	114,254	81,986	196,240	303,357
'75–76	43,396	105,114	148,510	125,038	85,293	210,331	358,841
Totals	859,343	1,158,247	2,017,590	597,131	4,017,901	4,615,032	6,632,622

TABLE II.—*Statement showing the Debentures and Treasury Bills in Circulation under the several Loans of the Colonial and Provincial Governments of New Zealand, the Amount of Sinking Fund Accrued, the Balance of Indebtedness, and the Amount of the Annual Charge for Interest and Sinking Fund.*

Act Authorising the Loan.	Amount of Debentures in Circulation on 30th June, 1876.	Sinking Fund Accrued to 30th June, 1876.	Total Debt after Deducting Sinking Fund.	Annual Charge.		
				Interest.	Sinking Fund.	Total.
	£	£	£	£	£	£
Ordinance of Legislative Council	311	—	311	—	—	—
New Zealand Loan Act, 1856	500,000	270,522	229,478	20,000	10,000	30,000
„ '60	93,100	42,552	50,548	5,586	1,862	7,448
„ '63	1,519,400	269,531	1,249,869	76,284	20,508	96,792
New Zealand Debentures Act, 1864, and Amendment Act, 1865	50	—	50	—	—	—
Consolidated Loan Act, 1867	4,660,100	545,100	8,060,400	232,875	45,831	278,706
Immigration and Public Works Loan Act, 1870	3,195,400			151,432	21,000	172,432
Defence and Other Purposes Loan Act, 1870	750,000			36,875	6,000	42,875
Immigration and Public Works Loan Act, 1873	1,500,000	—	1,500,000	67,500	—	67,500
Immigration and Public Works Loan Act, 1874	4,000,000	—	4,000,000	180,000	—	180,000
General Purposes Loan Act, 1873	250,000	—	250,000	11,952	—	11,952
Treasury bills	572,000	—	572,000	29,359	—	29,359
Auckland Loan Act, 1863	31,600	5,341	26,259	1,896	632	2,528
Wellington Loan Act, 1862	2,000	2,000	—	160	80	240
„ '66	13,500	4,160	9,340	1,080	270	1,350
Wellington Debts Act, '71	75,000	—	75,000	3,750	—	3,750
Nelson Waterworks Loan Act, 1864	6,200	4,354	1,846	496	124	620
Lyttleton and Christchurch Railway Loan Act, 1860	77,700	28,324	49,376	4,662	1,554	6,216
Canterbury Loan Ordinance, 1862	22,800	14,453	8,347	1,368	228	1,596
Westland Loan Act, 1873	50,000	—	50,000	2,500	—	2,500
Otago Loan Ordinance, 1862	116,700	19,990	96,710	7,002	1,167	8,169
North Otago District Public Works Loan Act, 1872	48,900	—	48,900	2,445	6,800	9,245
Total	17,484,761	1,206,327	16,278,434	837,222	116,056	953,278
Act 1870 and 1873, issued 8th July, 1876	1,250,000	—	—	—	—	62,500
	18,734,761	1,206,327	16,278,434	837,222	116,056	1,015,778

TABLE III.—*Wages.*

The following are the rates prevailing at Auckland in June and July, 1876, according to the last reports from the immigration officers :—

	s.	d.		s.	d.	
Bakers, butchers, and brewers	7	6	to	8	6	per day.
Blacksmiths	8	–	„	9	–	„
Carpenters and coachbuilders	8	6	„	10	6	„
Coopers, working engineers, stone masons, millers, and millwrights	8	–	„	9	–	„
Plumbers and painters	7	–	„	7	6	„
Plasterers	9	–	„	10	6	„
Ropemakers	6	–	„	7	–	„
Saddlers, shoemakers, and tailors	8	–	„	9	–	„
Ordinary labourers	6	–	„	7	–	„
Ploughmen, gardeners, and farm labourers, with house accommodation and partial supplies	12	6	„	22	6	per week.
Female servants, with board	6	–	„	12	–	„
Cooks and laundresses, with board	8	–	„	12	–	„

TABLE III *Contd.—Prices of Provisions in* 1873, *from Official Handbook.*

		s.	d.
Meat—Beef	per lb.	–	4½
Mutton	„	–	3
Pork	„	–	5½
Bread—Wheaten	„	–	2¼
Butter—Fresh	„	1	2
Salt	„	–	10
Milk	per quart	–	4
Flour	per 196 lb.	32	–
Grain—Wheat	per bshl.	6	–
Tea	per lb.	3	–
Coffee	„	1	8
Sugar	„	–	5½
Beer	per hhd.	100	–
Brandy	per gal.	22	–
Wine	„	15	–

TABLE IV.—*Ordinary Revenue for the Year ending 30th June,* 1876.

	£
Customs, duties, rents, seizures, &c.	1,225,747
„ bonded stores	5,280
„ fees	16,417
Stamp duties	112,388
Postal	93,162
Telegraphic	63,038
Judicial fees and fines	37,993
Registration of land	12,184
„ deeds	15,453
„ births, deaths, and marriages	5,231
Fees on issue of crown grants	4,410
Miscellaneous	2,397
Incidental receipts	52,056
Railways	57,459
	1,703,215

TABLE V.—*Summary of Percentage Increase during the last Eight or Ten Years ending December*, 1875.

	Comparing the First Five Years with the Last Five Years of the Decade.	Comparing the First Two Years with the Last Two Years of the Decade.	Increase per Head, 1871-75 on 1866-70.
	Per cnt.	Per cnt.	£ s. d.
Population	increase 38	increase 70	—
Revenue—			
Ordinary	increase 34	increase 70	5 18 –
Territorial	„ 66	„ 38	5 4 5
Expenditure—			
Charges on consolidated fund	increase 10	increase 38	1 2 8
Wool—			
Weight	increase 55	increase 103	—
Value	„ 73	„ 112	—
Imports	increase 23	increase 44	—
Exports—			
Gold	decrease 25	decrease 47	14 15 2*
Other produce	increase 84	increase 132	
Gold and other produce	„ 21	„ 20	
Live Stock, comparing 1867 *with* 1874—			
Horses, valued at £10 – –	increase 51 per cnt.		6 8 6*
Cattle „ 4 – –	„ 58 „		
Sheep „ – 4 –	„ 39 „		
Pigs „ – 2 6	„ 8 „		
Lands under Cultivation, 1868 *to* 1875—			
Comparing first four years with last	increase 78 per cnt.		33 15 6*
„ two „	„ 143 „		—
Colonial Debt—			
Comparing June, 1870, with June, 1867	increase per head 59 per cnt.		—
Annual charge	„ 34 „		– 13 4

* From these items must be deducted interest on the increase of capital borrowed by individuals from creditors beyond the colony, since 1870; to be perfectly safe, say 1,000,000*l.* per annum at 6 per cent., or upon the mean population equal to 3*s.* 10*d.* per head per annum.

TABLE VI.—*New Zealand. Deaths*, 1875, *Males.*

	Total Under Five Years.	Total Over Five Years.	Total from Specific Cause.	Percentage of Deaths, all Causes.	Percentage of Deaths, all Causes, England, 1861-70.
CLASS I. *Zymotic Diseases.*					
Smallpox	—	—	—	—	0·8
Measles	114	29	143	4·3	1·9
Scarlatina	7	10	17	0·5	4·3
Diphtheria	27	19	46	1·4	0·8
Typhus and typhoid	28	167	195	5·7	3·8
Whooping cough	7	—	7	0·2	2·0
Diarrhœa and dysentery	239	25	264	7·8	4·4
Other zymotic diseases	115	99	214	6·4	2·8
Total Class I	537	349	886	26·3	20·8
CLASS II. *Constitutional Diseases.*					
Phthisis	13	207	220	6·5	10·5
Other constitutional diseases	84	105	189	5·7	4·8
Total Class II	97	312	409	12·2	15·3
CLASS III. *Local Diseases.*					
Nervous system	150	195	345	10·2	13·0
Organs of circulation	10	180	190	5·6	5·5
„ respiration	232	223	455	13·5	15·7
„ digestion	84	126	210	6·3	4·2
Other local diseases	7	57	64	1·9	2·5
Total Class III	483	781	1,264	37·5	40·9
CLASS IV. *Developmental Diseases*	342	57	399	11·8	18·0*
CLASS V. *Violence*	36	325	361	10·7	5·0
Cause not defined	19	38	57	1·5	—
General total	1,514	1,862	3,376	100·0	100·0

* This includes "causes not defined" and all causes not included in other four classes.

TABLE VII.—*Deaths*, 1875, *Females.*

	Total Under Five Years.	Total Over Five Years.	Total from Specific Cause.	Percentage of Deaths, all Causes.	Percentage of Deaths, all Causes, England, 1861-70.
CLASS I. *Zymotic Diseases.*					
Smallpox	—	—	—	—	0·7
Measles	110	36	146	6·3	1·7
Scarlatina	12	7	19	0·8	4·4
Diphtheria	29	31	60	2·6	1·0
Typhus and typhoid	24	121	145	6·2	4·2
Whooping cough	7	—	7	0·3	2·7
Diarrhœa and dysentery	219	27	246	10·4	4·3
Other zymotic diseases	114	93	207	8·9	2·7
Total Class I	515	315	830	35·5	21·7
CLASS II. *Constitutional Diseases.*					
Phthisis	9	110	119	5·1	11·7
Other constitutional diseases	79	90	169	7·2	5·7
Total Class II	88	200	288	12·3	17·4
CLASS III. *Local Diseases.*					
Nervous system	113	91	204	8·7	11·8
Organs of circulation	4	82	86	3·7	4·6
„ respiration	161	119	280	12·0	—
„ digestion	57	88	145	6·2	—
Other local diseases	6	20	26	1·1	—
Total Class III	341	400	741	31·7	16·4
CLASS IV. *Developmental Diseases*	257	112	369	15·9	—*
CLASS V. *Violence*	50	36	86	3·7	—
Causes not defined	12	10	22	0·9	—
General total	1,263	1,073	2,336	100·0	55·5

* This includes "causes not defined" and all causes not included in other four classes.

Discussion *on* Mr. Hamilton's Paper.

Sir Julius Vogel said he was sure that Mr. Hamilton's paper had been listened to with a great deal of pleasure by those who were interested in the colony, although he did not mean to say that all the statements in it would be concurred in. He was glad to be allowed to make a few remarks about it. It was not until 1869 that the soldiers were actually taken away from the colony, although since 1863 such a step was threatened. At the time of the removal native affairs were very gloomy, and the Government viewed with alarm the determination to carry it into effect. Since then native affairs have occupied much attention, and at times occasioned great anxiety. No doubt the public works policy had materially aided in reconciling the natives to European rule, but to Sir Donald McLean's patience, immense personal influence and exquisite tact, were in his (Sir J. Vogel's) opinion, mainly to be attributed the fact that for the first time in the history of the colony, native affairs had ceased to be the all absorbing subject, and leisure and freedom were afforded to deal with questions of colonisation. He much regretted the reference Mr. Hamilton had made to the provinces. Besides that, he recognised the good old maxim *de mortuis nil nisi bonum*. It was far from the case that they were responsible in the way Mr. Hamilton supposed for the railways being carried out simultaneously from several points. Any other plan would have defeated its own ends. The provinces had done good work in the past, and although the need for their existence ceased to be, their services should not be forgotten. Now that the abolition was completed, it was gratifying to think that the organic change in the constitution had not been made without much argument and consideration. To have lightly altered the constitution would have shown that it had not deeply sunk into the hearts of the people. He could not admit the justice of all Mr. Hamilton's comparisons. To his mind a comparison of the debt incurred for war purposes with the debt incurred for large public reproductive works had no meaning. If he attached importance to the figures, he might point out that in including the last-issued loan in the amount negotiated up to the end of June, Mr. Hamilton had omitted to bear in mind that at least a half-million of it, besides the 800,000*l.* guaranteed debentures, should not have been included as expended. With all due respect to the Society, he must say that it was quite possible for statistics to represent a mass of figures without appealing to any sympathy or intelligence from which a comparison could be instituted. He could not understand what was to be gathered from the fact of a nominal amount per head of a public debt. He agreed with Mr. Dudley Baxter, who had put upon record that the only true way of ascertaining the incidence of public debt was by comparing it with the ability of the population to pay it. He could conceive

that there were many peoples and countries that were able to bear a nominal amount of taxation far in excess of the taxation which would be most burdensome to another country where the earnings were smaller. He rather inclined to the opinion that the very heavy taxation in the United States pressed much less burthensomely upon the settled population, than the very light taxation of this country upon the working population; and he was quite certain that if the taxation of New Zealand went up to a large amount the population would be much better able to pay it than the working men of this country were able to pay the ordinary taxation. When the expenditure upon railways was compared with the expenditure upon war, what did it mean? Supposing any one were to say "I have spent twice as much money this year as last. Last year I spent 500*l.* in a law suit which brought me in nothing whatever, and this year I spent 1,000*l.* in improving my estate; hence I have been more extravagant this year than last." What would be thought of such a statement? Mr. Dudley Baxter had said—and he thought there were many that would entirely agree with him—in giving information of a most imperfect kind as to the earnings of the peoples of different countries, that although such information was founded on a mere approximate estimate, it gave a far truer idea of the real burden of the debt of a country than the most accurate figures. Then came the question as to what importance was to be attached to the fact of the New Zealand loans not being quoted so high as those of other countries. His opinion was that the circumstances which ruled the prices of the stock exchange were entirely independent of the conditions upon which the money was spent within the colony. The quotations from day to day of the stock exchange were not criteria of value, but of the amount of stock in the hands of wholesale dealers. As a matter of fact, all the loans of the constitutional colonies were undeniably secured. They were first charges on the revenue. Neither the governor nor the audit department would allow the annual votes to be defrayed until the permanent charges were paid. Besides, not only were the unsold lands security, but the sold lands could be reached by taxation. Fluctuations in the value of a security on the stock exchange did not necessarily follow the prosperity or depression of a colony. For instance, New Zealand securities had gone up 2 per cent. within the last nine weeks, but he was not aware the country had made any particular stride in that time. The question of immigration was, he thought, one of vast interest. His own attention was called to it in 1868, by reading a most interesting work by Sir Morton Peto upon the resources of America, and when he studied the wonderful results of immigration to the United States, it seemed to him that a new country could not make too great a sacrifice for the purpose of increasing its population. He had jotted down a few of the facts. In 1800 the population of the United States was only 5,300,000, and in 1860 it had increased to 31,400,000. Two-thirds of the population up to 1860 were immigrants and descendants of immigrants, and yet, astonishing to relate, the total number of immigrants was only 5,200,000, who had multiplied to 21,000,000. Of the number

of immigrants 3,000,000 arrived between 1849 and 1860. In 1800 the population of the United Kingdom was 16,000,000, and in 1860 it had not doubled. In considering the amount of debt of the United Kingdom and New Zealand respectively, it should be remembered the comparison was between a country whose population had not doubled within sixty years, and one whose population had doubled in ten years. It had been computed that at the same rate of progression as in the United Kingdom, in 1860 the population of the United States would only have been 10,000,000 instead of 31,000,000. When he saw those wonderful results, it suggested a great deal to his mind and the minds of those who were acting with him. Mr. Hamilton had expressed some doubt as to how the value of an emigrant was to be obtained. It could best be arrived at, he thought, by estimating what was the amount of his earnings, and that would be a complicated affair. He thought that the cost of producing an emigrant might be, at any rate, arrived at by considering what the emigrant had to go through before he arrived at the age of twenty. A German philosopher had devoted a great deal of attention to the subject, and he had estimated the value of an adult at 200*l.*, which, he thought, was within the mark. In reference to the question as to whether the New Zealand immigration had been successful, he thought it was not possible to conceive a more profitable occupation in the case of a new country than introducing immigrants at 20*l.* per head, who were worth more than that sum to the country per annum. In respect to New Zealand, it was found that in the four years ending 1875, during which the immigration had been conducted on a large scale, the immigrants who paid their own passages exceeded the number of emigrants by 11,400, and this was in addition to the 65,000 persons whose passages had been assisted, showing that over and above the immigrants introduced by the Government, there was an excess of arrivals of those who paid their own passages over those who left the colony. The policy of public works was not to provide work to immigrants for the mere sake of keeping them, but to enter upon such works as would enlarge the scope of private enterprise by giving a market to the produce of land hitherto cut off from communication. They hardly conceived what the value of the land was, or they would not doubt the policy of opening it up. The following data had been given to him by colonists at present in this country:—

"Two thousand and ninety-four acres of land were purchased about 1871 at 2*l.* an acre—when a railway was not opened within eighteen miles. The land was sold in 1876 in thirty-five lots at an average per acre of 9*l.* 6*s.* The railway then ran past it.

"Four thousand, seven hundred and seventy-four acres were bought in June, 1873, at 2*l.*—about 10*s.* an acre was spent on it. It was sold in July, 1876, at 5*l.* 5*s.* an acre. Three months after the purchase nearly every acre was ploughed. There were twenty double-furrowed ploughs at work. Railway not within 60 miles when purchased. When sold open within 8 miles.

"Six thousand acres within 16 miles of Timaru let to contractors for one crop (the land being in its natural state) yield

50 and 55 bushels of wheat per acre—this wheat, if sold by the contractors early in the season, that is shortly after harvest, would have brought 3*s.* 3*d.* and 3*s.* 9*d.* per bushel in Timaru. As the year went on, prices rose, and by last advices, wheat being scarce, was sold at 5*s.* and 5*s.* 3*d.*, but this price may be considered exceptional. Farmers, as a rule, may calculate upon receiving 3*s.* 3*d.* and 3*s.* 6*d.* immediately after harvest in such districts as Timaru; in the Oamaru district, from its proximity to Dunedin and a more populous district, prices rule about 6*s.* per bushel above Timaru.

"The contractors in the Timaru district have the land for one crop, according to situation of land. Some they get rent free, and pay, in some cases, 5*s.* and 10*s.* and 15*s.* per acre. The landlord fences the land, and provides grass seeds where grass is sown with the wheat.

"The cost of producing wheat, say from breaking up of the land to delivery of wheat at a port is about 4*l.* per acre, that is provided the proprietor of the land does it on his own account, and employs labour by contract—contractors who take the land for one crop having the labour within themselves, of course can do it much cheaper for themselves. The profitable result to contractors during the last two or three years has increased the demand for land on the cropping system, and they can afford to pay 5*s.* and 15*s.* rent, and make a good profit—15*s.* is being paid by contractors this year for land in the Waikato district, in the Otago provinces, 30 miles from Oamaru."

There was no extravagance in constructing railways to open up land like this. It was an essential part of the policy of the Government to settle the north island, and if what Mr. Hamilton had suggested had been done, namely, constructing the railways one by one, instead of carrying out that policy, the population of the north island would have been drained. As Mr. Hamilton had said, the natives had responded to their friendship, and had accepted with pleasure the policy of peace instead of the policy of war. It had often been stated that if left to themselves the colonists would be cruel to the natives. Their reply was the money spent on roads and railways this decade against that spent on wars the last decade. It was a policy of public works and settlement against one of fire and sword—a policy of saving life instead of destroying it. Let those who were ready to censure the colonists take these facts to heart. People were all more or less swayed by surrounding influences, and Mr. Hamilton, though he had most ably and conclusively defended the colony, had not at the last the courage of his opinions, but to some extent censured the Government he had so ably vindicated. Let them remember this, that in deciding on the policy they adopted, the colonists had everything in their favour. The people were educated to a far greater extent than the mass of the people in this country. The climate of the colony was splendid, its lands of vast productive power; it did not suffer from droughts; it was a country capable of supporting millions. The labouring men of this country found in it a great relief. There they had easy hours, plenty of food, and, above all, a career open to their children. Thousands of persons in happy

homes, whose lives would otherwise have been miserable, were ready to justify the policy of the colonists. And, after all, what had the colonists to justify? That they asked British capitalists for money on good security to spend on reproductive works, instead of asking the British taxpayer to contribute to the cost of wretched wars.

Mr. Prance said he had perhaps more knowledge than most others in the room, and he would in the first place reply to the question raised as to why the credit of New Zealand on the London Stock Exchange was not equal to that of other colonial loans, such as for instance New South Wales. The answer was, that the colony has raised money at high rates because they had thrown too much stock on the market. He had no doubt that in a few years' time New Zealand would earn on its railways as much per cent. as the New South Wales railways earned, viz., 4 per cent.; but at the present moment it was a fact that the money raised by New Zealand did not bring in to the colony an equal amount of profit as the money raised by New South Wales, Victoria, or others of the South Australian colonies. He believed that ere long the superior climate and soil, with the influx of so many emigrants from Great Britain, would have the effect of making New Zealand the foremost of British colonies.

Mr. Samuel Hill wished to call attention to the amount invested in savings banks, to which no allusion had been made. He found that the amount thus invested amounted, in New Zealand, to 2*l.* 5*s.* per head of population. Of course this was less than the amount of charge on the public debt; but it must not be forgotten that a degree of thrift and frugality would have to be exercised in order to accumulate such a sum. The question of education was a very important one, especially when there was a school attendance of no less than 45,562. He thought that the elementary school system of the mother country had been introduced to New Zealand with very considerable profit and advantage. He hoped that the day was as far distant when the last of the Maoris would have left New Zealand, as he believed it would be when the prophecy would be fulfilled as to the New Zealander surveying the ruins of London Bridge. Speaking of hospital accommodation, he said that it would be found that in New Zealand there were 931 beds to a population of 400,000, or one bed to every 429. Taking the population of the metropolis at 4,000,000, it would be found that in the same proportion there would be 9,302 beds. He must say that he did not find anything like that number. He deprecated the small amount of accommodation in the New Zealand hospitals that was provided for children, and hoped that if ever the ex-premier returned to the colony he would give this matter his attention.

The Rev. Mr. Doxsey said he wished to call attention to an interesting subject which Mr. Hamilton, from want of time, had omitted, namely the price of products. It was not more important to know what colonists earned than what they were obliged to spend. He had assisted a poor family to emigrate to New Zealand

to better their condition, and from a letter received from them since, he had learned that a whole sheep could be purchased in the district where they lived for 4*s.*; but in one of the tables accompanying the paper the price of mutton was 3*d.* a pound, so that there was a great difference between the two. But even from the tables it would be seen that New Zealand was a much cheaper place to live in than England; and if people could earn greater wages than in England and live at less cost, the colonies would be able to bear a larger amount of expenditure than the mother country would. It would, however, be seen from the tables, that in the colony various articles of produce, such as butter and milk, were very expensive, but if such a commodity as pure milk was sold at 4*d.* a quart—the same price as it was said to be in New Zealand—the price would be more remunerative to the New Zealand farmer, who paid less for his land than was paid in England. He wished to know if Mr. Hamilton's tables could be relied on, and also further information as to the real amount a family expended, as well as what they could earn.

Dr. Guy thought that Sir Julius Vogel had put the value of an emigrant at a very low figure. He thought the value would be nearer 400*l.* than 200*l.*; and when it was remembered that an emigrant in his adopted country married and became the father of children who, in their turn, had families, it was difficult to say what the true value of an emigrant was. This was so interesting a point, that he hoped some member of the Society would on some future occasion read a paper on the value of the emigrant as he was sent out.

Sir James Fergusson, Bart., K.C.M.G., said that having been in New Zealand, and having watched the progress of Sir Julius Vogel's policy, he rejoiced that that evening there had come from an impartial source so intelligent and instructive an exposition of the fruits of that policy. As to the value of the emigrant, it was quite true that the mother country was in one point of view a loser by his departure from its shores; but emigrants were by no means lost to the mother country, because they became consumers of its manufactures and produce to an extent which it was impossible to estimate. It had been said over and over again lately, that the trade of the Australian colonies now amounted to 90,000,000*l.* sterling a-year, which was only to be accounted for by the enormous advantages enjoyed by those who had transferred their fortunes to the other side of the world, and who became larger consumers of the produce of the mother country than they would have been at home. Even in this narrow point of view the country was a great gainer by the transfer of its surplus population to the shores of another country. Sir Julius Vogel had pointed out, with a degree of justice that could not be gainsaid, that the paper hardly did the colony justice. It was one of the great advantages possessed by New Zealand over the Australian colonies, that whereas each of the latter had been colonised for the most part from one great centre, New Zealand had been colonised from various points, so

that the distribution of population and wealth had been more rapid. In New Zealand it was found that every link of line opened from any one town began immediately to pay, when in this country it would not have been thought worth while opening it. One of the speakers in giving his reasons why the New Zealand investments had ceased to be popular, omitted to notice that many of the large public works were only in progress: in fact a great proportion of the capital employed had not become remunerative. It was most unfair to gauge the reproductive power of public works by their returns when they were only half finished. In this country the interest of money was always added to capital until the railway was opened. The fact was that they must look forward to some years hence, and take the great results already yielded as an earnest of that which was to come. Mr. Hamilton had pointed out that in estimating the application of the debt to New Zealand, it was fair to estimate it by the application of similar funds in this country; but whereas in England the national debt is applied to very few purposes, in New Zealand all public works, the telegraphs included, were constructed by its means. In fact in these new countries the private means of the inhabitants were applied to the development of the country itself, and to the properties which they possessed. They could not afford to subscribe even for the ends which were so necessary for their own profit as means of communication. These things were all done in new countries by the Governments, and even in America by the several States, which gave such enormous benefactions of land, proving so valuable to the railways. Mr. Hamilton might also have pointed out that not only the railways and telegraphs had been made out of the loans, but also the roads; and when he left New Zealand about a year and a half ago, if he remembered rightly, 2,000 miles of road had been constructed out of the produce of these loans. If the amount spent in the mother country in making the turnpike roads were added to the amount spent on railways and telegraphs, the two amounts would be altogether reversed. It was unfortunate that New Zealand securities were for the moment depressed; but he ventured to say this was the result of ignorance on the part of the British public as to the real working policy of New Zealand. There was something like unfairness in the statements made by some persons in this country, who had not yet rid themselves of the political animosity which they brought from other ends of the world. No doubt when those gentlemen left New Zealand the public works' policy had not become so completely justified as it was now. Very plausible statements had been made, but made in such a manner as to produce a very injurious effect upon New Zealand securities. Two or three weeks ago he read a statement in a leading article in the "Times" which, if it had been made with full knowledge of the circumstances, he would really characterise as malignant. A most flourishing city in New Zealand—the city of Christchurch—asked for its first municipal loan for a work which was eminently calculated to be a public advantage, and for which ample security was provided. This was announced in the city article of the

"Times" with some such sneering remark as that people had lately heard too much about New Zealand. What would be said about the proposal for an investment in the making of a railway in a rich district in the south of England being met by a statement that too much money had been borrowed in the north of Scotland? Because Dunedin and other towns had borrowed money for their requirements, should that depreciate a loan asked for by Christchurch? That was a specimen of the reasons why New Zealand securities were depressed in the market. He hoped and believed that the administration of New Zealand was determined to exercise the great policy of economy and prudence, and to limit their expenditure to what the country really required.

Dr. Farr said he felt greatly indebted to Mr. Hamilton for his model paper, but he was sorry that the discussion had degenerated into a Stock Exchange discussion. People in this country must all take a deep interest in New Zealand, and wish that colony every kind of success. What he admired in Mr. Hamilton was his great impartiality; and if New Zealand held its own and acted, as Mr. Hamilton recommended it—with prudence—they would receive from this country all the loans they required. In the Society's *Journal** there was a valuation made of an English labourer in Suffolk. The value of the baby was reckoned at 5*l*., and the value increased until it reached, at the age of 25, 246*l*. He agreed with Sir Julius Vogel, that it should be the policy of the colonies to endeavour to induce a good class of Englishmen to go and live in them. As Dr. Guy had pointed out, it was not only a man and his family that had to be taken into account; there was a perpetual succession of men. The most important export this country had given to the world was its men, which would, no doubt, contribute much to the advantage of the world in future ages.

In answer to a question,

Dr. Farr said, that the estimate he had referred to of the value of a man was made in 1853, but no doubt it was much higher now. An admirable work Sir Julius Vogel had done was to remove some of the agricultural labourers from a place where they were worth very little, to a place where they were worth a great deal.

Mr. Hamilton in reply thanked those who had taken part in the discussion. He considered himself more especially fortunate in having been criticised by Sir James Fergusson, the ex-governor of New Zealand, and by Sir Julius Vogel, the ex-prime minister. As to the table of wages and provisions, he believed that the figures were perfectly authentic. He was prepared to produce a voucher for every figure and every fact stated in the paper, and he thought he had throughout been studiously moderate in the statements he had advanced. With reference to the value of an immigrant, it would depend very much upon the demand for labour in the place

* See vol. xvi, p. 43.

to which he emigrated. At one time a favourite subject for discussion was, "What are we to do with our surplus population?" It was then thought to be rather a relief that a man should emigrate than that he should stop at home. This must necessarily be the case even now, because when an emigrant from this country goes to one of the colonies or to the United States, he not only lessens the competition in the labour market at home, but he increases the demand for labour at home, by his consumption of the productions of the mother country. With regard to the valuation of an immigrant, he should like very much, if he had leisure, to work it out properly; but it had been suggested to him that the proper way to estimate the value of an immigrant into a country, would be to add to the wages of the labourer, the profit derived from the same by his employer, then deduct from the total the cost of his living, or rather the net value of what he consumes, and multiply the result by the probabilities of life. There were, however, a variety of circumstances to be taken into account. It would be seen from the appendix, that wages differed very much according to the nature of a man's employment. It was a complex question, and he doubted if it could be arrived at with scientific accuracy. There would be one result in New Zealand, another in New South Wales, and another in the United States. With regard to the railways, it was unfair, as Sir James Fergusson had said, to test the earnings of a railway which existed only in a fragmentary condition. There was not, as yet, in New Zealand a through line. On the portions of lines which had been opened for traffic the earnings had been 445,000*l.*, which deducting the cost of working, was stated officially to have yielded 3 per cent. upon the cost of the mileage opened. That, he considered, was a very promising result, and as the railways were made with a proper regard to economy, say upon the 3 feet 6 inches gauge, and cost about 6,000*l.*, a-mile, he had not the slightest doubt that the railways would return the interest upon the cost of their production in a few years. He was very much obliged for the kind manner in which his paper had been received.

The President called attention to the fact that about three-fifths of the trade of New Zealand was in wool, which seemed to be the staple export. Wool growing seemed to have attained a high degree of perfection, and this no doubt would be the principal cause of the future prosperity of the colony.

MISCELLANEA.

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I.—*Report by Dr. Mayr on the Exhibition of Charts and Diagrams at the Ninth International Statistical Congress, held at Buda-Pesth, in September*, 1876.

The short time allowed for the preparation of this report prevents my being able to give a full and detailed account of the diagrams exhibited, and even if I had time, it would hardly offer points of sufficient interest, as these forms of representation are much about the same in every country. There can be no question moreover as to the material scientific importance of the statistical relations dealt with in these diagrams. Hence the jury will have sufficiently fulfilled their duty by giving in the first place a general glance at the share of the various countries in the exhibition of the diagrams themselves, and then pointing out and enlarging upon the general point of view from which the present exhibition offers matter of special interest.

Great Britain appears to be very well represented in these diagrams, all the subjects exhibited belonging almost exclusively to this form of graphic representation with which we have here to deal. At the same time the most varied methods are here shown. Examples of these diverse systems may to be found in W. J. Howard's Mining Statistics of the United Kingdom diagram (No. 8), and Ernest Seyd's chart on the movement of the note circulation of the Bank of England (No. 9); the method used in the former is that of circles, whereas the latter shows a varied combination of lines and plain surfaces. Joseph Spencer's diagram on the consumption and price of cotton (No. 10) is an example on a large scale of a diagram on the plan of flat surface.

But the greatest interest is centred in the atlas produced by the Statistical Society (No. 15), containing the diagrams of Dr. Farr for his report on the cholera of 1849. These diagrams are more especially of great interest, as they are noteworthy examples of diverse diagraphical representations, at a time when few countries had yet begun to practise the use of this method for statistical purposes. Special note should be taken of the circular diagrams which clearly show each month the excess or deficiency of mortality, as compared with an average year.

Besides a large number of maps, Russia is represented by variously worked-out diagrams, and especially by combinations of diagrams and cartograms (diagrams having reference to geographical position)—the latter comprising an exhibition of the religious divisions of the Russian people, by Musnitzky. Mention must also be made of a diagram exhibited by the war ministry of Russia showing the cost of keeping up the stud in the different Governments of Russia; also two works rich in diagrams, the first by Timirjazeff, showing the development of industry and trade in Russia during the last twelve years; the second by Schmulewitsch, on the sanitary state of the army in the year 1872. Finnland sends a special representation of her timber export. In an immense rectangle, the vertical line represents the series of years, horizontal lines marking the various ports, the sections thus marked off being connected by other lines terminating in the form of a polygon at the names of the ports indicated on an accompanying map.

Austria sends us various diagrams well worthy of attention, some prepared at central offices and State statistical bureaux, others by different railway companies.

In the atlas exhibited by the Direction of Administrative Statistics (No. 46), cartograms are predominant, still it contains at the end several diagrams, amongst others a ribbon-shaped diagram referring to the carriage of goods to Vienna by rowing boats. The graphic-statistical representations drawn up by Dr. Alois Hussa (No. 48) are well worthy of special attention, on account of their minute geographical details.

The publications of the Imperial and Royal Technical and Administrative Military Commission have long been regarded as masterly specimens of military statistical work. The works exhibited (No. 49) furnish another proof of their excellence.

A gem of diagraphical representation is to be found in the atlas of the countries represented at the Reichstrath on the basis of cadastral operations finished in 1873, exhibited by the Ministry of Finance at Vienna (No. 50). It contains a register of the market prices of corn, wheat, barley, oats, and maize, in each of the 340 divisions of the Empire, during the years 1855-69, carefully worked out by line diagrams. To understand the practical value of these diagraphical representations, it is important to know that the object is not to merely popularise statistical results, but to ensure a quick and correct account of the proportionate prices of cereals for the use of the Central Committee for Land Taxes, a knowledge of which is absolutely indispensable to them for their work. Mention must also be made of the graphic-statistical "surveys" of Carinthia and the Bukowina (Nos. 52 and 53), prepared by the same Ministry. Cartographical and diagraphical representations of particular branches of industry have also been sent from the Ministry of Commerce in Vienna. A very useful and instructive representation of harvests and climatic influences on the same, is to be found in the diagrams prepared by Dr. J. K. Lorenz and Dr. J. Breitenlohner, both gentlemen being members of the staff of the Imperial and Royal Ministry of Agriculture. They

show the movements of the weather and its influence upon the development of grain and fodder during the years 1871-75 at Lobositz (No. 80). The curves and plain surfaces are here combined in so ingenious and logical a manner as to show clearly and at a glance the production of the harvests, rainfalls and temperature, plain surfaces representing the quantities (harvest yield and rainfalls), and curves the other elements, such as the temperature.

The Statistical Bureau of the Imperial and Royal City of Vienna, has sent numerous diagrams on an unusually large scale. Unfortunately the titles and description of many of them are so incomplete that they are practically useless for the purposes of this exhibition. As an example, the description subjoined to the large diagram (No. 104) is not in accordance with the representation.

Then we come to five railway companies :—

1. The Imperial and Royal Austrian State Railway Company.
2. The Imperial and Royal Galician Carl-Ludwig Company.
3. The Imperial and Royal Austrian North-West Railway, and South German Union Railway Company.
4. The Imperial and Royal Dux-Bodenbach Company.
5. The Aussig Teplitz Company.

The large share which is taken by these railway companies in this exhibition is of great and characteristic significance, as it is evidently their intention to study the different methods of administration and the varied manner of working their lines, probably one of the chief reasons for undertaking the work of preparing with such care and attention the submitted diagrams. As time will not allow of our minutely describing each of these diagraphical representations, we will, therefore, only take two well worked out instructive ones as types of the others.

The Carl-Ludwig Railway Company brings before our notice, in the form of a diagraphical representation, drawn up by Von Skarbek-Michalowsky, some interesting statistics on snow drifts (No. 129). By means of a plain surface diagram we can take in at a glance on the one hand the height of the falls of snow along the whole length of the line; on the other, the extent and exact spots where the drifts are heaviest.

Great interest will undoubtedly be taken in a methodical plan of W. Müller's, as shown in his circle diagram (No. 651) representing the North-Western Railway, giving a comparative statement of the thirty-six Austro-Hungarian railway companies, which shows the lengths of line open for traffic, the net receipts per mile, and ton mileage of goods, in connection with the cost of construction and the traffic and profit on each. The different elements of the comparison are partly represented peripherically, partly in radia, and there can be no shadow of doubt that anyone who takes the trouble to study this system of representation, will be immediately struck with the practical value and importance of it, as showing in a comparative form the position of the different railway companies, especially in a financial view. For general purposes this mode of representation may appear perhaps somewhat too complicated, but for anyone connected with the administration of railways, there can be no question as to its being of great practical assistance.

Two works of importance and interest call for special attention among the subjects exhibited by the Royal Society for Agriculture and Management of Woods and Forests in Bohemia. 1, a diagram showing the average prices of crops in Bohemia, and also of bread and beef at Prague from the year 1800 to 1870, with the necessary explanations, carefully prepared by Dr. Karl Koristka (No. 144); 2, Professor G. Schmidt's logarithmic paper (method of comparing diagrams on a logarithmic basis), also with the necessary explanations (No. 158). Both Koristka and Schmidt attach the greatest importance to the representation of the proportion in the fluctuations of different phenomena, and prefer, when comparing the fluctuating prices of different articles (that is to say articles of different values), to lay aside the old method of representing them, and adopt the logarithmic system, whereby it is supposed the relative fluctuation can be more correctly expressed. To a certain extent, and up to a certain point, there is much to be argued, pro and con, on this method of treating the subject, but we are firmly of opinion that the old system which shows the absolute magnitude of the fluctuations, is undoubtedly the one giving the clearest idea of the matter. A duplication *in abstracto* really means nothing, it only obtains a significance through the number the duplication of which is in question. The method therefore adopted by Koristka and Schmidt appears simply to have the effect of obliterating the clear idea conveyed by statistical curves, and to result in an artificial depression of culminating points, thereby tending to mislead those who do not always bear in mind the fact that the relative proportion of fluctuations alone is intended to be represented here.

Hungary next appears in this exhibition with a rich collection of carefully drawn up and instructive diagrams. The Royal Statistical Bureau, in addition to several diagrams on harvests, conflagrations and meteorological subjects, appears with two on the cholera epidemics of 1866 and 1873 (Nos. 206 and 207), works which are remarkable for their clearness of execution.

The Statistical Bureau of Buda-Pesth places before us several of their publications and diagrams, collected in such a manner as to form a special group (No. 234).

The Ministry of Finance has also sent diagrams having reference to mining statistics (Nos. 281 and 283).

A large and comprehensive collection of graphic diagrams representing statistics of the prices of agricultural produce in Hungary, published by the Buda-Pesth Chamber of Commerce, is also in the exhibition (No. 319).

Professor Fodar of Buda-Pesth has worked out in a geographical form several excellent dotted diagrams, showing in a very clear manner the various epidemics which have visited the town of Buda-Pesth (Nos. 325 to 328). Dr. Béla Weisz's comprehensive diagraphical work comprises an atlas (No. 338), containing in the space of 120 pages, divided into eleven parts, a plan or programme of international statistics on the state of a country from an economic point of view, and is also a work well worthy of attention. The author appears to have a preference for right angles, notwithstanding the fact that other methods might, more or less success-

fully, have been employed, for instance, the angular diagrams in showing the increase in the prices of food and other articles of consumption.

Several line and plain surface diagrams which have appeared in the publications issued by the Statistical Bureau of Prussia, have also been contributed to this exhibition; foremost among them and most worthy of attention is the work of Dr. Engel on the statistics of the Franco-Prussian war, 1870-71.

A collection of diagrams is also exhibited, prepared by the Bavarian Statistical Bureau; amongst others plain surface diagrams, showing clearly, in a triangular form, the amount of instruction given at the various stages of education.

Wurtemburg also has sent several graphic works forming part of its statistical publications; among others mention should be made of several diagrams prepared by Kull, similar in a great degree to the elaborately worked maps by the same author, showing the small natural districts into which Wurtemburg is divided, and admirably exhibiting like these maps the geognostical relations of these districts.

The Saxon State railways are represented by an excellent collection of diagrams, prepared in an admirable and most scientific manner by Ulbricht, with corresponding notes, explaining in such a lucid manner as to show at the first glance the most minute details as to their working and net income. Those of Ulbricht's diagrams which show the movement of goods according to the different means of transport, as gross weight, and also those referring to passengers and goods, as net weight, and to the net income, may be regarded as models for those persons interested in railway management.

Finally there are diagrams from various other German States, viz., Hesse, Baden, Saxe-Weimar, and the town of Hamburg, all of which have the same object, viz., to regard statistics from various points of view, but give occasion for no remarks as far as the method is concerned.

With reference to Belgium, we must call attention, as meriting particular notice, to the rich collection of diagrams forwarded for this exhibition by the Board of Health of the town of Brussels (Dr. Jannsens). Different systems of graphic representations are here employed in a skilful manner. We notice amongst them the same circular method as that mentioned in noticing the English exhibition. But a new and interesting modification is to be observed in the Belgian system which is wanting in the English, viz., that the causes of death are shown in a more amplified form by the employment of larger radia, so as to bring out also the share of each cause of death in the total mortality.

France sends a scientific diagraphical representation in the form of divisional charts for Europe, executed by Levasseur (No. 569). The value of this map is enhanced by small square plain surface diagrams around the border, showing at a glance the different natural and social relations of each country, thereby greatly facilitating the study of geography.

The official statistics of Italy have lately been distinguished by a

lavish use of this graphic method, and the remark applies not only to the statistical publications prepared by the State Statistical Bureaux, but also to the various central administrations. Indeed, we find in the Italian exhibition, in addition to the well-known works of M. Bodio, and numerous meteorological diagrams, several interesting diagraphical representations relating to bridges, roads (*ponts et chaussées*), and finance. Besides the usual ones in curves, we find coloured plain surface diagrams extensively used.

If before taking leave of this exhibition, we give a retrospective glance at the different diagrams contained in it, we cannot fail to observe, that the most varied methods of diagraphical representations are here displayed, linear and plain surface diagrams playing the principal *rôle*. And it is with great satisfaction we record this fact, for it is only in exceptional cases that a complicated method of diagraphical representation should be resorted to, seeing the great danger there is of making the diagrams answer the opposite purpose for which they were intended. As one of these complicated forms which has been used to a considerable extent, the diagraphical representation in circles may be mentioned. That form has a real justification in those cases where a movement by months has to be shown, such as the deaths by months for an average year deduced from a long series of years; for the months January and December would be represented in this form in close proximity to each other, as they are in fact, which would not be the case if the linear system were used, as they would then be at the opposite extremities of a straight line.

In conclusion, we must not pass over unnoticed the significant fact that these numerous diagraphical representations which we have received, appear to us to have been drawn up and prepared with the greatest care, not merely to make statistics popular with the public in general, but with the steady object in view of rendering assistance to the State and other bureaus in their work of compiling statistical tables; for a proof of this we may refer to the diagrams furnished by the various railway companies. I take this opportunity of bringing prominently forward this characteristic application of diagrams, and to point out the practical value of their further use and application on statistical subjects, the more especially as we are enabled by such means to discern a method whereby the interest that diagraphical representation possesses may be greatly enhanced.

II.—*The Fires of London during the Year* 1876, *and the Metropolitan Fire Brigade.*

Subjoined are some particulars extracted from Captain Shaw's annual report to the Metropolitan Board of Works, in continuation of similar notices for previous years :—

"The number of calls for fires, or supposed fires, received during the year has

been 1,787. Of these 91 were false alarms, 64 proved to be only chimney alarms, and 1,632 were calls for fires, of which 166 resulted in serious damage, and 1,466 in slight damage.

"These figures refer only to the regular calls for fires, or supposed fires, involving the turning out of firemen, fire engines, horses, and coachmen; they do not include trifling damages by fires which were not sufficiently important to require the attendance of firemen; neither do they include the ordinary calls for chimneys on fire, which are separately accounted for further on.

"The fires of 1876, compared with those of 1875, show an increase of 103; and compared with the average of the last ten years, there is an increase of 42.

"The proportion of serious to slight losses—166 to 1,466—shows that our success in reducing losses during 1876 has been about the same as in the previous year.

"The following table gives it both in actual numbers and percentages:—

Year.	Number of Fires.			Percentage.		
	Serious.	Slight.	Total.	Serious.	Slight.	Total.
1866.....	326	1,012	1,338	25	75	100
'67.....	245	1,152	1,397	18	82	100
'68.....	235	1,433	1,668	14	86	100
'69.....	199	1,373	1,572	13	87	100
'70.....	276	1,670	1,946	14	86	100
'71.....	207	1,635	1,842	11	89	100
'72.....	120	1,374	1,494	8	92	100
'73.....	166	1,382	1,548	11	89	100
'74.....	154	1,419	1,573	10	90	100
'75.....	163	1,366	1,529	11	89	100
'76.....	166	1,466	1,632	11	89	100

"The number of fires in the Metropolis in which life has been seriously endangered during the year 1876 has been 72; and the number of these in which life has been lost has been 29.

"The number of persons seriously endangered by fire has been 123, of whom 88 were saved, and 35 lost their lives. Of the 35 lost, 23 were taken out alive, but died afterwards in hospitals or elsewhere, and 12 were suffocated or burned to death.

"The number of calls for chimneys has been 4,325. Of these 1,420 proved to be false alarms, and 2,905 were for chimneys on fire. In these cases there was no attendance of engines, but only of firemen with hand-pumps.

"The number of journeys made by the fire engines of the 49 land stations has been 7,445, and the total distance run has been 23,120 miles.

"The quantity of water used for extinguishing fires in the metropolis during the year has been 21,166,178 gallons—in round numbers a little more than 21 million gallons, or about 94,500 tons. Of this quantity 54,433 tons, or about three-fifths of the whole, was taken from the river, canals, and docks, and the remainder from the street pipes.

"During the year there have been six cases of short supply of water, twenty-four of late attendance of turncocks, and ten of no attendance, making altogether forty cases in which the water arrangements were unsatisfactory.

"The strength of the brigade at present is as follows:—

49 fire engine stations.
107 „ escape „
4 floating „
56 telegraph lines.
101 miles of telegraph lines.
3 floating steam fire engines.
1 iron barge, to carry a land steam fire engine.
5 large land steam fire engines.
21 small „
14 seven-inch manual fire engines.
58 six-inch „
20 under six-inch „
136 fire escapes.
400 firemen, including the chief officer, the superintendents, and all ranks.

"The number of firemen employed on the several watches kept up throughout the metropolis is at present 95 by day and 182 by night, making a total of 277 in every twenty-four hours; the remaining men are available for general work at fires.

"Our list of wounds and other injuries for 1876 is, as usual, large; but, so long as the men work well, no diminution of accidents can be expected.

"There have been during the year 287 cases of ordinary illness, and 70 injuries, making a total of 357 cases, of which many were very serious, and two terminated in death."

From the tables appended to the report are taken the following particulars:—

(*a*) The fires classified according to trades, arranged in the order of frequency:—

	Number of Fires.
1. Private houses	327
2. Lodgings	193
3. Victuallers	58
4. Farming stock	41
5. Oil and colourmen	31
6. Cabinet makers	30
7. Tailors, clothiers, and outfitters	30
8. Stables	25
9. Grocers	25
10. Drapers	22
11. Boot and shoe makers	22
12. Booksellers and stationers	22
13. Builders	21
14. Under repairs and building	20
15. Railways	17
16. Coffee houses	17
17. Greengrocers and fruiterers	17
18. Carpenters and workers in wood (not cabinet makers)	15
19. Bakers	15
20. Schools	14

	Number of Fires—*Contd.*
21. Chandlers	14
22. Engineers and machinists	13
23. Hairdressers	13
24. Printers	13
25. Let out in tenements	12
26. Milliners and dressmakers	12
27. Laundries	12
28. Furniture makers and dealers	12
29. Confectioners and pastry cooks	12
30. Refreshment rooms	11
31. Beershop keepers	11
	1,097
Remainder, varying from 10 to 1	535
Total	1,632

(*b*) The fires classified according to the causes to which they have been assigned, arranged in the order of frequency.

Causes.	Number of Fires.
1. Unknown	331
2. Lamps (not gas) and lights	249
3. Sparks from fires, &c.	179
4. Flues—defective	175
5. Candle	152
6. Gas	146
7. Children playing with fire and matches	60
8. Hot ashes	47
9. Overheating of stoves, coppers, kilns, ovens, and furnaces	44
10. Airing and drying stoves	32
11. Smoking tobacco	28
12. Lucifers	27
13. Vapour of spirits and oil	24
14. Boiling over of oil, fat, pitch, &c.	23
15. Spontaneous ignition	17
16. Stoves, &c., improperly set	13
17. Overheating of boilers, &c.	13
18. Lime	12
19. Hearths and fireplaces—defective	11
20. Burning rubbish	9
Miscellaneous and doubtful	40
Total	1,632

(*c*) The usual summaries for 1876 show:—that the greatest number of fires occurred in July (214), and the smallest number in October (110); that the largest number of fires (260) occurred on Sunday, and the smallest number (218) on Monday; and that the hours during which the greatest number of fires have occurred are from 8 to 11 P.M., and those most exempt from such disaster are from 5 to 8 A.M.

With reference to the daily summary, the following table, which gives

the total of the fires for each day of the week for the last ten years, shows on the *average* that the largest number of fires occur on Saturday and the smallest number on Monday. The annual average number of fires for the ten years is 1,620.

Years.	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Total.
1867....	202	169	219	210	191	198	208	1,397
'68....	233	227	234	267	229	225	253	1,668
'69....	220	220	229	251	199	235	218	1,572
'70....	290	252	258	266	300	258	322	1,946
'71....	286	202	247	302	271	258	276	1,842
'72....	199	206	213	207	220	220	229	1,494
'73....	202	209	237	199	230	243	228	1,548
'74....	222	228	228	195	240	231	229	1,573
'75....	200	203	231	227	236	209	223	1,529
'76....	260	218	226	235	242	221	230	1,632
Total...	2,314	2,134	2,322	2,359	2,358	2,298	2,416	16,201

"The number of lives lost during the year by fire is 35, the number saved 88.

Captain Shaw in his report recommends six firemen for special merit, who collectively saved 23 lives during the year.

III.—*English Literature in* 1876.

The following extracts, analytical table, and monthly summary of books published in 1876, are taken from the December (1876) number of the *Publishers' Circular*, in continuation of a series of similar extracts for previous years:—

"Last December, in examining the statistics for the year, we had occasion to express our surprise at the favourable nature of the returns. It is again our pleasant duty to chronicle a degree of prosperity which the most sanguine individual could hardly have predicted. While it must be regretted that there has been a decline in the number of new works issued in some of the most important branches of literature, the total number of books published in 1876 shows a satisfactory increase as compared with 1875. The year has been marked by a decided falling-off in new books, and an increase, equally noteworthy, in new editions. Let us hope that the modest increase of the past year may be set down as a delicate indication of improvement in the general trade of the country.

"The number of works published during 1876, as compared with the previous year, stands thus:—1876, 4,888; 1875, 4,854.

"In theology there has been a decline: a fact which may or may not prove satisfactory. Many distinguished theologians have doubtless been devoting their leisure to education and to social reform. In theology we chronicle a falling short of 66 from the number of 1875.

"In educational, classical, and philological works, as might have been expected, we note steady progress in the number of new works and reprints. This year produced 470; last year, 335.

"Juvenile works and tales have nearly doubled in number. There are for 1876, 419, while for the previous year only 217. It would be well could we add that the standard of juvenile literature had made a corresponding advance.

"Law has added wonderfully to its literature. In 1876, 164; in 1875, 114.

"Fiction exhibits a remarkable decline. In 1876, 857; the previous year, 974.

"Political and social economy, trade, and commerce, show a decided advance, owing probably to political complications in Europe, social and administrative reform at home, and the continued abnormal depression of trade at home and abroad. Of this class were produced in 1876, 377; in 1875, 101.

"Art, science, and illustrated works exhibit a diminution, caused by the cost of illustrations in part, probably, and by the continued stagnation of art and other industries. In 1876 we chronicle 252, against 572 in 1875.

"Voyages and travels have also declined. Happily the importance of the works of this year, in a measure, compensate for the loss in numbers. 270 are set down to 1876, and 300 to 1875. Of history, biography, &c., there were in 1875, 391, against 347 this year. Poetry and the drama fall short of the previous year. This is much to be regretted, as they might have afforded a sweet solace to the British public in its hours of depression. In 1876 were issued 323; in 1875, 348. The reprints are in excess of last year.

"Medicine, surgery, &c., have scored a good innings for this year compared with last, for which we may be partly indebted to the increased activity of the medical profession, and partly to the threatened spread of dangerous epidemic disease.

"Belles lettres, essays, monographs, &c., are about on a par with last year. In 1876 the number is 176; in 1875 it was 177.

"Miscellaneous, including pamphlets, not sermons. In 1876 were issued 166; in 1875, 201.

"It will be gathered from the foregoing statistics that there is no immediate prospect of a collapse in the intelligence or taste of the British public."

Summary for each Month.

	New Books.	New Editions.	American Importations.
January	149	51	30
February	204	146	35
March	389	210	34
April	247	129	29
May	199	180	25
June	237	161	26
July	279	210	49
August	124	94	14
September	132	80	21
October	210	206	32
November	249	192	41
December	512	298	41
	2,931	1,957	377

Analytical Table of Books Published in 1876.

Subjects.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total of Books on each Subject for the Year.
Theology, sermons, biblical, &c.	*29	37	58	31	32	38	54	22	19	29	36	92	477
	† 8	14	20	19	17	13	17	11	5	20	25	41	216
													— 693
Educational, classical, and philological	*11	27	40	30	18	24	20	11	20	19	17	41	278
	† 5	7	30	16	22	12	25	14	7	16	13	25	192
													— 470
Juvenile works and tales	* 7	12	28	12	11	7	2	7	9	25	42	82	244
	† 2	13	13	9	11	2	2	2	5	65	20	31	175
													— 419
Novels, tales, and other fiction	*11	13	56	30	29	45	49	25	24	45	51	74	452
	†11	37	45	31	49	48	46	20	17	31	36	34	405
													— 857
Law, jurisprudence, &c.	* 1	6	17	18	2	10	7	3	1	18	6	12	101
	† 2	9	9	5	2	6	4	6	3	3	6	8	63
													— 164
Political and social economy, trade and commerce	*13	19	40	27	23	31	26	11	13	15	21	32	271
	† 2	11	13	9	8	9	9	9	8	8	8	12	106
													— 377
Arts, science, and illustrated works	*12	3	25	17	8	17	13	8	5	12	11	21	152
	† 6	11	9	6	4	7	20	2	8	8	10	9	100
													— 252
Voyages, travels, and geographical research	*10	14	17	24	11	16	19	8	9	7	8	34	177
	† 2	5	4	1	7	20	16	9	7	6	7	9	93
													— 270
History, biography, &c.	*15	22	25	20	24	20	25	10	8	13	18	28	228
	† 6	8	22	7	10	7	6	4	7	11	12	19	119
													— 347
Poetry and the drama	*13	20	23	16	10	9	22	8	9	7	3	30	170
	† 4	8	16	5	20	17	23	2	6	16	8	28	153
													— 323
Year books and serials in volumes	*11	13	17	3	3	1	2	—	—	—	1	6	57
	†—	10	4	6	4	—	11	4	3	6	30	58	136
													— 193
Medicine, surgery, &c.	* 5	9	16	9	5	4	16	5	9	10	12	8	108
	† 2	6	11	7	7	3	14	1	—	5	11	6	73
													— 181
Belles lettres, essays, monographs, &c.	* 5	7	7	3	6	3	9	4	2	6	14	34	100
	† 1	6	10	7	10	6	8	1	1	10	5	11	76
													— 176
Miscellaneous, including pamphlets, not sermons	* 6	2	20	7	17	12	15	2	4	4	9	18	116
	†—	1	4	1	9	11	9	9	3	1	1	1	50
													— 166
	200	350	599	376	379	398	489	218	212	416	441	810	4,888
Total of books in each month	*149	204	389	247	199	237	279	124	132	210	249	512	2,931
	† 51	146	210	129	180	161	210	94	80	206	192	298	1,957
	‡ 30	35	34	29	25	26	49	14	21	32	41	41	377

* New books. † New editions. ‡ American importations.

Note.—Making the total during the twelve months, full titles, 5,265 given in the *Publishers' Circular*.

IV.—*Wrecks and Sun Spots.*

We extract the following from *Lloyd's List* of 15th March last. The contribution, we believe, is by a member of the Society, to whom the *Journal* has been indebted for various interesting memoranda:—

"A comparative table of losses posted on *Lloyd's Loss Book*, with sun spots and rainfall in Southern India, compiled from tables by Dr. W. W. Hunter. See *Times*, 26th February, 1877. Divided into two cycles of eleven years each.

Wrecks, Sun Spots, and Rainfall.

	Years.	Percentage of Losses Posted on Lloyd's Loss Book.				Average Rainfall in Inches.		Minimum or Maximum Sun Spots.	Drought or Famine.
		On Registered Vessels of United Kingdom.		On Total Posted in Eleven Years.					
		Each Year.	Mean.	Each Year.	Mean.	Supposed Probable each Year.	Actual Average.	Proved or Hypothetical.	Actual Recorded.
	1854....	—	—	—	—	37			1854 drought and famine
First Cycle.	1855....	11·53	12·34	8·00	8·48	41	40	Minimum sun spots	
	'56....	12·81		8·97		42			
	'57....	11·88	11·69	8·60	8·54	42	42		
	'58....	11·51		8·48		42			
	'59....	13·57	12·68	10·04	9·75	52	54	Maximum sun spots	
	'60....	12·79		9·46		56			
	'61....	13·10	12·97	9·82	9·79	53	52		
	'62....	12·84		9·76		51			
	'63....	13·64	12·58	10·44	9·63	50	49		
	'64....	11·52		8·82		48			
	'65....	9·89		7·61		37		Minimum sun spots	Drought
Second Cycle.	1866....	11·63	11·07	10·18	9·53	41	40		Famine
	'67....	11·69		10·16		42			
	'68....	9·85	10·42	8·46	8·74	42	42		
	'69....	10·99		9·02		42			
	'70....	10·81	11·24	8·61	8·87	52	54	Maximum sun spots	
	'71....	11·67		9·13		56			
	'72....	13·00	12·67	10·13	9·83	53	52		
	'73....	12·34		9·53		51			
	'74....	12·19	11·10	9·39	8·55	50	49		
	'75....	10·01		7·72		48			
	'76....	9·97?	—	7·67	—	37	—	Minimum sun spots	Drought, and in 1877 famine

"The average rainfall in Madras since 1813 is 48½ inches. Dr. Hunter proves that—first, the five years of minimum sun spots within the period have averaged 37 inches; secondly, that rainfall rises and falls with increase or decrease of sun spots; thirdly, that if the cycle is taken at the average of eleven years, the minimum rainfall occurs at the eleventh, first, and second years, and rises to its maximum at the intermediate period, declining to minimum in the central group of the eleventh, first, and second years. Droughts occurred in 1854, 1865, and 1876, causing famines in 1854, 1866, and 1877. Cyclonic disturbances may pro-

duce an abnormal rainfall and alter the comparison, but the coincidences are certainly remarkable between these recorded observations and the actual facts of maritime casualties as posted on the *Loss Book* at Lloyd's, and tend to indicate an ascertainable connection between them. The first column of percentages is manifestly an arbitrary standard, relating only to British registered vessels, while the losses posted are those of both British and Foreign ships; it is taken simply to bring the figures to a common basis of comparison during the two cycles of eleven years."

REGISTRATION OF THE UNITED KINGDOM.

No. I.—ENGLAND AND WALES.

MARRIAGES—Quarter ended September, 1876.
BIRTHS and DEATHS—Quarter ended December, 1876.

A.—*Serial Table of* Marriages, Births, *and* Deaths, *returned in the Years* 1876-70, *and in the* Quarters *of those Years.*

Calendar Years, 1876-70:—*Numbers.*

Years.....	'76.	'75.	'74.	'73.	'72.	'71.	'70.
Marriages No.	—	200,980	202,010	205,615	201,267	190,112	181,655
Births..... ,,	887,464	850,187	854,956	829,778	825,907	797,428	792,787
Deaths .... ,,	510,308	546,317	526,632	492,520	492,265	514,879	515,329

Quarters *of each Calendar Year*, 1876-70.

(I.) Marriages:—*Numbers.*

Qrs. ended last day of	'76.	'75.	'74.	'73.	'72.	'71.	'70.
March.....No.	41,757	42,237	41,413	41,217	40,539	36,305	36,455
June ..... ,,	51,218	48,360	52,827	53,408	50,380	48,831	46,720
September ,,	49,135	49,817	49,144	49,709	49,818	46,536	43,900
December ,,	—	60,566	58,626	61,281	60,530	58,440	54,580

(II.) Births:—*Numbers.*

Qrs. ended last day of	'76.	'75.	'74.	'73.	'72.	'71.	'70.
March.....No.	229,980	215,251	214,514	215,744	208,752	209,523	206,366
June ..... ,,	225,866	214,650	217,598	206,516	208,790	201,165	203,615
September ,,	216,167	210,781	210,323	204,167	201,746	193,271	192,521
December ,,	215,451	209,505	212,521	203,351	206,619	193,469	190,285

(III.) Deaths:—*Numbers.*

Qrs. ended last day of	'76.	'75.	'74.	'73.	'72.	'71.	'70.
March.....No.	142,269	162,514	136,518	132,432	134,952	138,393	143,773
June ..... ,,	126,212	130,797	123,907	118,582	120,835	120,793	121,128
September ,,	119,909	121,459	124,253	114,676	118,927	121,332	124,297
December ,,	121,918	131,547	141,954	126,830	117,551	134,361	126,131

Annual Rates of Marriages, Births, *and* Deaths, *per* 1,000 Persons Living *in the Years* 1876-70, *and the* Quarters *of those Years.*

Calendar Years, 1876-70:—*General Ratios.*

Years.....	'76.	Mean '66-75.	'75.	'74.	'73.	'72.	'71.	'70.
Estmtd. Popln. of England *in thousands* in middle of each Year....	24,244,	—	23,944,	23,649,	23,356,	23,068,	22,783,	22,501,
Persons Married	—	16·8	16·8	17·1	17·6	17·5	16·7	16·1
Births	36·5	35·4	35·5	36·2	35·5	35·8	35·0	35·2
Deaths.....	21·0	22·2	22·8	22·3	21·1	21·3	22·6	22·9

Quarters *of each Calendar Year,* 1876-70.

(I.) Persons Married:—*Ratio per* 1,000.

Qrs. ended last day of	'76.	Mean '66-75.	'75.	'74.	'73.	'72.	'71.	'70.
March	13·8	13·8	14·3	14·2	14·3	14·1	12·9	13·2
June.....	16·9	17·1	16·2	17·9	18·3	17·5	17·2	16·7
September	16·1	16·4	16·5	16·5	16·9	17·1	16·2	15·5
December	—	19·8	20·1	19·7	20·8	20·8	20·4	19·2

(II.) Births:—*Ratio per* 1,000.

Qrs. ended last day of	'76.	Mean '66-75.	'75.	'74.	'73.	'72.	'71.	'70.
March	38·0	36·9	36·5	36·8	37·5	36·3	37·3	37·3
June.....	37·4	36·1	36·0	36·9	35·5	36·3	35·5	36·4
September	35·4	34·5	34·9	35·3	34·7	34·7	33·7	34·0
December	35·3	34·5	34·7	35·7	34·5	35·5	33·7	33·6

(III.) Deaths:—*Ratio per* 1,000.

Qrs. ended last day of	'76.	Mean '66-75.	'75.	'74.	'73.	'72.	'71.	'70.
March	23·5	24·6	27·5	23·4	23·0	23·5	24·7	26·0
June.....	20·9	21·4	21·9	21·0	20·4	21·0	21·3	21·6
September	19·6	21·0	20·1	20·8	19·5	20·5	21·1	22·0
December	20·0	22·1	21·8	23·8	21·5	20·2	23·4	22·3

B.—*Comparative Table of* Consols, Provisions, Pauperism, *and* Coal *in each of the Nine* Quarters *ended December*, 1876.

1	2	3	4	5	6	7	8	9	10
Quarters ending	Average Price of Consols (for Money).	Average Rate of Bank of England Discount.	Average Price of Wheat per Quarter in England and Wales.	Average Prices of Meat per lb. at the Metropolitan Meat Market (by the Carcass), with the *Mean* Prices.		Average Prices of Potatoes (York Regents) per Ton at Waterside Market, Southwark.	Pauperism. Quarterly Average of the Number of Paupers relieved on the *last day* of each week.		Sea-borne Coal in London Market per Ton.
				Beef.	Mutton.		In-door.	Out-door.	
1874	£		*s.* *d.*	*d.* *d.* *d.*	*d.* *d.* *d.*	*s.* *s.* *s.*			*s.* *d.*
Dec. 31	93	4·6	44 4	$4\frac{7}{8}$—$8\frac{1}{4}$ $6\frac{5}{8}$	$4\frac{3}{4}$—8 $6\frac{3}{8}$	73—96 84	138,868	587,772	24 7
1875									
Mar. 31	$92\frac{3}{4}$	3·7	42 6	5—8 $6\frac{1}{2}$	$4\frac{3}{4}$—8 $6\frac{3}{8}$	81—111 96	146,708	622,652	22 5
June 30	$93\frac{3}{4}$	3·5	42 6	$5\frac{1}{4}$—$8\frac{1}{4}$ $6\frac{3}{4}$	$5\frac{1}{2}$—$9\frac{1}{2}$ $7\frac{1}{2}$	80—120 100	131,717	592,362	20 8
Sept. 30	$94\frac{3}{8}$	2·4	49 –	$5\frac{1}{2}$—$8\frac{1}{2}$ 7	$5\frac{1}{2}$—$9\frac{1}{2}$ $7\frac{1}{2}$	70—93 82	125,614	555,409	20 4
Dec. 31	$94\frac{3}{8}$	3·2	46 7	$5\frac{1}{2}$—$8\frac{1}{2}$ $6\frac{7}{8}$	6—$9\frac{1}{4}$ $7\frac{5}{8}$	105—127 116	136,124	546,251	22 6
1876									
Mar. 31	$94\frac{1}{8}$	4·1	43 8	$5\frac{1}{2}$—8 $6\frac{3}{4}$	$5\frac{1}{2}$—9 $7\frac{1}{4}$	121—151 136	145,088	558,026	19 9
June 30	$95\frac{1}{2}$	2·2	45 10	5—$8\frac{1}{4}$ $6\frac{5}{8}$	5—10 $7\frac{1}{2}$	125—170 147	134,357	535,419	18 8
Sept. 30	$95\frac{7}{8}$	2·0	47 1	$5\frac{1}{4}$—$8\frac{1}{2}$ $6\frac{7}{8}$	$5\frac{3}{4}$—$9\frac{3}{4}$ $7\frac{3}{4}$	—	130,347	517,196	19 –
Dec. 31	$95\frac{5}{8}$	2·0	48 2	$4\frac{1}{2}$—8 $6\frac{1}{4}$	$5\frac{1}{4}$—9 $7\frac{1}{8}$	—	141,907	514,739	19 –

C.—*General Average Death-Rate Table:—Annual Rate of Mortality to* 1,000 *of the Population in the Eleven Divisions of England.*

Divisions.	Average Annual Rate of Mortality to 1,000 Living in						
	Ten Years 1861-70.	1875. Quarters ending		1876. Quarters ending			
		Sept.	Dec.	March.	June.	Sept.	June.
England and Wales	22·4	20·1	21·8	23·5	20·9	19·6	20·0
I. London	24·3	21·5	24·3	24·7	20·9	21·5	21·4
II. South-Eastern counties	19·1	16·1	17·5	19·2	17·3	16·5	16·4
III. South Midland ,,	20·2	17·7	18·8	20·5	17·4	17·0	17·1
IV. Eastern counties	20·1	17·9	19·0	20·3	18·0	16·9	16·8
V. South-Western counties	19·9	15·9	19·6	21·5	19·6	16·4	17·4
VI. West Midland ,,	21·8	19·1	21·0	23·4	20·1	19·1	19·7
VII. North Midland ,,	20·8	21·2	21·2	23·2	20·5	20·5	19·5
VIII. North-Western ,,	26·3	23·3	25·7	29·0	25·2	22·9	24·3
IX. Yorkshire	24·0	22·9	23·5	23·9	22·6	21·4	21·4
X. Northern counties	22·7	23·7	22·6	23·2	20·6	20·2	19·4
XI. Monmouthshire and Wales	21·6	18·1	20·5	23·2	22·4	17·6	19·2

D.—*Special Average Death-Rate Table:*—ANNUAL RATE *of* MORTALITY *per* 1,000 *in* TOWN *and* COUNTRY DISTRICTS *of* ENGLAND *in each Quarter of the Years* 1876-74.

	Area in Statute Acres.	Population Enumerated. 1871.	Quarters ending	Annual Rate of Mortality per 1,000 in each Quarter of the Years 1876.	Mean '66-75.	1875.	1874.
In 134 Districts, and 57 Sub-districts, comprising the *Chief Towns*	3,184,419	12,900,142	March	25·3	26·6	28·9	25·1
			June	22·1	22·8	22·7	22·3
			Sept.	21·7	23·7	22·3	23·4
			Dec.	21·9	24·6	23·9	26·5
			Year	22·8	24·4	24·5	24·3
			Year	18·6	19·4	20·7	19·5
In the remaining Districts and Sub-districts of England and Wales, comprising chiefly *Small Towns* and *Country Parishes*	34,134,802	9,812,124	March	21·1	22·1	25·7	21·2
			June	19·2	19·5	20·8	19·3
			Sept.	16·7	17·3	17·2	17·4
			Dec.	17·3	18·7	18·9	20·2

Note.—The three months January, February, March, contain 90, and in leap year 91 days; the three months April, May, June, 91 days; and each of the last two quarters of the year, 92 days. For this inequality a correction is made in calculating the rate of mortality in the different quarters of the year.

E.—*Special Town Table:*—POPULATION; BIRTHS, DEATHS; MEAN TEMPERATURE *and* RAINFALL *in the Fourth Quarter of* 1876, *in* TWENTY-THREE *Large Towns.*

Cities, &c.	Estimated Population in the Middle of the Year 1876.	Births in 13 Weeks ending 30th Dec., 1876.	Deaths in 13 Weeks ending 30th Dec., 1876.	Annual Rate to 1,000 Living during the 13 Weeks ending 30th Dec., 1876. Births.	Deaths.	Mean Temperature in 13 Weeks ending 30th Dec., 1876.	Rainfall in Inches in 13 Weeks ending 30th Dec., 1876.
Total of 23 towns in U. K.	8,028,595	74,313	44,757	37·2	22·4	46·1	11·82
London	3,489,428	31,891	18,799	36·7	21·6	47·0	10·36
Brighton	100,632	759	456	30·3	18·2	48·0	10·66
Portsmouth	124,867	996	635	32·0	20·4	48·7	9·84
Norwich	83,430	719	444	34·6	21·4	46·9	7·14
Plymouth	72,230	547	379	30·4	21·1	49·1	16·98
Bristol	199,539	1,887	983	38·0	19·8	46·7	13·51
Wolverhampton	72,549	699	423	38·7	23·4	45·1	10·07
Birmingham	371,839	3,956	1,865	42·7	20·1	45·8	—
Leicester	113,581	1,171	672	41·4	23·7	45·8	—
Nottingham	93,627	885	488	37·9	20·9	45·5	10·48
Liverpool	521,544	4,931	3,261	37·9	25·1	45·6	11·10
Manchester	357,917	3,260	2,335	36·6	26·2	45·6	10·38
Salford	138,425	1,613	1,130	46·8	32·8	45·1	10·95
Oldham	88,609	913	633	41·4	28·7	—	—
Bradford	173,723	1,606	1,001	37·1	23·1	44·8	13·87
Leeds	291,580	2,973	1,693	40·9	23·3	45·6	12·13
Sheffield	274,914	2,846	1,568	41·5	22·9	45·4	13·56
Hull	136,933	1,371	739	40·2	21·7	45·2	12·66
Sunderland	108,343	1,058	624	39·2	23·1	45·3	10·57
Newcastle-on-Tyne	139,929	1,472	740	42·2	21·2	—	—
Edinburgh	215,146	1,674	980	31·2	18·3	—	—
Glasgow	545,144	5,010	3,150	36·9	23·2	—	—
Dublin	314,666	2,076	1,759	26·5	22·4	47·0	13·41

F.—*Divisional Table:*—MARRIAGES *Registered in Quarters ended 30th September*, 1876-74; *and* BIRTHS *and* DEATHS *in Quarters ended 31st December*, 1876-74.

1 DIVISIONS. (England and Wales.)	2 AREA* in Statute Acres.	3 POPULATION, 1871. (*Persons.*)	4 MARRIAGES in Quarters ended 30th September. 1876.	5 1875.	6 1874.
ENGLD. & WALES....*Totals*	No. 37,319,221	No. 22,712,266	No. 49,135	No. 49,817	No. 49,014
I. London	75,362	3,254,260	9,002	9,124	8,883
II. South-Eastern	3,994,431	2,167,726	4,110	3,920	3,917
III. South Midland	3,201,325	1,442,654	2,308	2,348	2,341
IV. Eastern	3,211,441	1,218,728	1,878	1,837	1,861
V. South-Western	4,981,170	1,880,777	3,144	3,197	3,125
VI. West Midland	3,945,460	2,720,669	5,586	5,590	5,623
VII. North Midland	3,535,445	1,406,935	2,822	2,919	2,824
VIII. North-Western	1,998,914	3,389,044	8,729	8,987	8,557
IX. Yorkshire	3,702,384	2,395,569	5,790	5,808	5,639
X. Northern	3,547,947	1,414,234	3,080	3,309	3,354
XI. Monmthsh. & Wales	5,125,342	1,421,670	2,686	2,903	3,893

7 DIVISIONS. (England and Wales.)	8 BIRTHS in Quarters ended 31st December. 1876.	9 1875.	10 1874.	11 DEATHS in Quarters ended 31st December. 1876.	12 1875.	13 1874.
ENGLD. & WALES....*Totals*	No. 215,451	No. 209,505	No. 212,367	No. 121,918	No. 131,547	No. 142,084
I. London	31,891	30,534	31,051	18,799	20,839	22,168
II. South-Eastern	18,255	17,372	17,677	9,752	10,210	10,058
III. South Midland	12,053	11,824	12,124	6,628	7,150	7,358
IV. Eastern	10,104	9,654	9,855	5,355	5,997	6,037
V. South-Western	13,454	13,410	13,840	8,366	9,409	8,969
VI. West Midland	26,748	25,369	26,301	14,289	15,048	16,270
VII. North Midland	14,011	13,131	13,253	7,221	7,801	8,512
VIII. North-Western	34,936	34,736	34,445	22,388	23,325	26,525
IX. Yorkshire	25,768	25,354	24,585	14,471	15,658	17,614
X. Northern	15,155	15,152	15,953	7,424	8,450	10,165
XI. Monmthsh. & Wales	13,076	12,969	13,273	7,225	7,660	8,413

* These are revised figures, and will be found to differ somewhat from those first published.

G.—*General Meteorological Table, Quarter ended 31st December*, 1876.

[Abstracted from the particulars supplied to the Registrar-General by JAMES GLAISHER, ESQ., F.R.S., &c.]

1876. Months.	Temperature of Air. Mean.	Diff. from Average of 105 Years.	Diff. from Average of 35 Years.	Temperature of Evaporation. Mean.	Diff. from Average of 35 Years.	Temperature of Dew Point. Mean.	Diff. from Average of 35 Years.	Air—Daily Range. Mean.	Diff. from Average of 35 Years.	Water of the Thames	Elastic Force of Vapour. Mean.	Diff. from Average of 35 Years.	Weight of Vapour in a Cubic Foot of Air. Mean.	Diff. from Average of 35 Years.
	°	°	°	°	°	°	°	°	°	°	In.	In.	Grs.	Gr.
Oct.	52·8	+3·2	+2·6	50·4	+2·2	48·0	+1·9	12·7	−2·1	56·3	·336	+·023	3·8	+0·2
Nov. ...	44·0	+1·7	+0·5	42·2	+0·9	40·0	+0·5	10·6	−1·0	46·5	·248	+·001	2·8	0·0
Dec. ...	44·1	+5·0	+4·0	42·8	+4·2	41·3	+4·5	7·5	−2·0	42·6	·261	+·041	3·0	−0·4
Mean ...	47·0	+3·3	+2·4	45·1	+2·4	43·1	+2·3	10·3	−1·7	48·5	·282	+·022	3·2	+0·2

1876. Months.	Degree of Humidity. Mean.	Diff. from Average of 35 Years.	Reading of Barometer. Mean.	Diff. from Average of 35 Years.	Weight of a Cubic Foot of Air. Mean.	Diff. from Average of 35 Years.	Rain. Amnt.	Diff. from Average of 61 Years.	Daily Horizontal Movement of the Air.	Reading of Thermometer on Grass. Number of Nights it was At or below 30°.	Between 30° and 40°.	Above 40°.	Lowest Reading at Night.	Highest Reading at Night.
			In.	In.	Grs.	Grs.	In.	In.	Miles.				°	°
Oct.	84	− 3	29·756	+·060	537	− 2	1·6	−1·2	240	1	9	21	28·6	55·9
Nov. ...	86	− 2	29·702	−·049	546	− 2	3·1	+0·8	248	9	12	9	21·6	48·2
Dec. ...	90	+ 2	29·311	−·494	539	−13	5·8	+3·8	316	4	20	7	20·3	47·1
Mean ...	87	− 1	29·590	−·161	541	− 6	Sum 10·5	Sum +3·4	Mean 268	Sum 14	Sum 41	Sum 37	Lowest 20·3	Highst 55·9

Note.—In reading this table it will be borne in mind that the sign (−) minus signifies below the average, and that the sign (+) plus signifies above the average.

The mean temperature of the air for October was 52°·8, being 3°·2 and 2°·6 above the averages of the preceding 105 years, and 35 years respectively. In the preceding 105 years there are but eight instances of so high a mean temperature for the month of October.

The mean temperature of the air for November was 44°·0, being 1°·7 and 0°·5 above the averages of the preceding 105 years and 35 years respectively; it was higher than the values in 1874 and 1875 by 2°·0 and 1°·9 respectively.

The mean temperature of the air for December was 44°·1, being 5°·0 and 4°·0 above the averages of the preceding 105 years and 35 years respectively. In the preceding 105 years there are but nine instances of so high a mean temperature for the month of December.

The mean high day temperatures of the air were respectively 1°·3, 0°·3, and 2°·7 above their averages in October, November, and December.

The mean low night temperatures of the air were respectively 3°·4, 1°·4, and 4°·9 above their averages in October, November, and December.

H.—*Special Meteorological Table, Quarter ended 31st December,* 1876.

1 Names of Stations.	2 Mean Pressure of Dry Air reduced to the Level of the Sea.	3 Highest Reading of the Thermometer.	4 Lowest Reading of the Thermometer.	5 Range of Temperature in the Quarter.	6 Mean Monthly Range of Temperature.	7 Mean Daily Range of Temperature.	8 *Mean Temperature of the Air.*	9 Mean Degree of Humidity.
	in.	°	°	°	°	°	°	
Guernsey	29·431	68·5	32·0	36·5	25·0	7·6	50·9	85
Osborne	29·450	69·2	27·1	42·1	32·7	10·8	48·1	91
Barnstaple	29·415	73·0	23·5	49·5	30·7	10·2	49·7	83
Blackheath	29·490	73·6	27·2	46·4	35·4	11·3	47·0	83
Oxford	29·453	69·6	28·1	41·5	32·6	9·4	47·2	87
Norwich	29·455	71·8	26·5	45·3	30·4	8·0	47·0	94
Llandudno	29·407	66·3	28·0	38·3	26·8	8·4	47·8	82
Liverpool	29·429	67·8	28·9	38·9	27·9	7·9	45·8	86
Stonyhurst	29·448	67·6	24·3	43·3	33·9	10·7	45·8	86
Bradford	29·448	65·0	29·0	36·0	27·1	7·0	45·4	83
North Shields	—	65·0	29·0	36·0	25·9	8·2	44·5	87
Milltown (Ireland)	29·373	65·0	23·0	42·0	29·3	9·6	45·0	86

10 Names of Stations.	11 Wind. Mean estimated Strength.	12 Wind. Relative Proportion of N.	13 E.	14 S.	15 W.	16 Mean Amount of Cloud.	17 Rain. Number of Days on which it fell.	18 Amount Collected.
								in.
Guernsey	1·6	4	8	11	7	6·6	63	20·27
Osborne	0·2	6	7	11	7	7·0	58	12·77
Barnstaple	1·3	3	9	13	5	4·8	59	14·02
Blackheath	0·9	5	7	12	7	7·4	52	10·77
Oxford	0·6	6	8	10	7	7·9	55	9·38
Norwich	—	3	10	12	5	—	53	7·33
Llandudno	0·7	2	6	13	9	7·7	56	12·74
Liverpool	1·2	4	14	9	4	7·2	55	11·72
Stonyhurst	—	6	9	8	8	8·4	57	10·41
Bradford	1·1	6	10	8	6	8·0	56	14·64
North Shields	1·7	7	6	9	9	7·7	69	10·88
Milltown (Ireland)	1·7	5	10	13	3	5·7	61	15·64

No. II.—SCOTLAND.

MARRIAGES, BIRTHS AND DEATHS IN THE QUARTER ENDED 31ST DECEMBER, 1876.

I.—*Serial Table:—Number of Births, Deaths, and Marriages in Scotland, and their Proportion to the Population estimated to the Middle of each Year, during each Quarter of the Years* 1876-72 *inclusive.*

	1876.		1875.		1874.		1873.		1872.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
1st Quarter—										
Births	32,333	3·67	31,096	3·56	29,837	3·45	30,210	3·52	29,506	3·47
Deaths	21,294	2·41	25,116	2·87	20,775	2·40	21,443	2·50	21,245	2·50
Marriages	6,663	0·75	6,369	0·73	6,777	0·78	6,618	0·77	5,820	0·68
Mean Temperature	37°·9		38°·7		40°·9		38°·1		40°·7	
2nd Quarter—										
Births	33,088	3·75	32,294	3·70	32,295	3·73	31,283	3·64	30,726	3·61
Deaths	19,270	2·18	19,518	2·23	19,640	2·27	19,931	2·32	19,045	2·24
Marriages	6,459	0·73	6,638	0·76	6,730	0·78	6,690	0·78	6,398	0·75
Mean Temperature	49°·2		50°·73		49°·53		49°·2		49°·2	
3rd Quarter—										
Births	30,790	3·49	30,123	3·45	30,702	3·55	28,975	3·38	29,181	3·43
Deaths	16,465	1·87	18,050	2·07	18,099	2·09	17,072	1·99	16,692	1·96
Marriages	5,895	0·67	5,723	0·65	5,582	0·64	5,816	0·68	5,891	0·69
Mean Temperature	56°·0		57°·27		56°·03		55°·4		55°·8	
4th Quarter—										
Births	30,538	3·46	30,180	3·45	30,961	3·58	29,270	3·41	29,460	3·46
Deaths	17,093	1·94	19,101	2·19	22,162	2·54	18,411	2·15	18,759	2·20
Marriages	7,546	0·86	7,191	0·82	7,158	0·83	7,606	0·88	7,471	0·88
Mean Temperature	43°·5		41°·7		39°·5		42°·7		41°·8	
Year—										
Population	3,527,811		3,495,214		3,462,916		3,430,923		3,399,226	
Births	126,749	3·59	123,693	3·54	123,795	3·57	119,738	3·49	118,873	3·49
Deaths	74,122	2·10	81,785	2·34	80,676	2·33	76,857	2·24	75,741	2·22
Marriages	26,563	0·75	25,921	0·74	26,247	0·76	26,730	0·78	25,580	0·75

II.—*Special Average Table:—Number of Births, Deaths, and Marriages in Scotland and in the Town and Country Districts during the Quarter ending* 31*st December*, 1876, *and their Proportion to the Population; also the Number of Illegitimate Births, and their Proportion to the Total Births.*

Registration Groups of Districts.	Population.		Total Births.			Illegitimate Births.		
	Census, 1871.	Estimated to Middle of 1876.	Number.	Per Cent.	Ratio. One in every	Number.	Per Cent.	Ratio. One in every
SCOTLAND	3,360,018	3,527,811	30,538	3·46	28	2,602	8·52	11·74
Principal towns	1,068,556	1,194,357	10,709	3·59	27	937	8·75	11·4
Large „	332,180	350,302	3,666	4·19	23	252	6·87	14·6
Small „	778,164	800,825	7,079	3·54	28	552	7·80	12·8
Mainland rural	1,049,114	1,052,754	8,149	3·10	32	833	10·22	9·8
Insular „	132,004	129,573	935	2·89	34	28	2·99	33·4

Registration Groups of Districts.	Population.		Deaths.			Marriages.		
	Census, 1871.	Estimated to Middle of 1876.	Number.	Per Cent.	Ratio. One in every	Number.	Per Cent.	Ratio. One in every
SCOTLAND	3,360,018	3,527,811	17,093	1·94	51	7,546	0·86	116
Principal towns	1,068,556	1,194,357	6,420	2·15	46	2,842	0·95	105
Large „	332,180	350,302	2,056	2·35	42	815	0·93	107
Small „	778,164	800,825	3,951	1·97	50	1,660	0·83	120
Mainland rural	1,049,114	1,052,754	4,205	1·60	62	2,045	0·78	128
Insular „	132,004	129,573	461	1·42	70	184	0·57	175

III.—*Bastardy Table:—Proportion of Illegitimate in every Hundred Births in the Divisions and Counties of Scotland, during the Quarter ending* 31*st December*, 1876.

Divisions.	Per Cent. of Illegitimate.	Counties.	Per Cent. of Illegitimate.	Counties.	Per Cent. of Illegitimate.	Counties.	Per Cent. of Illegitimate.
SCOTLAND	8·5						
Northern	6·2	Shetland	4·6	Forfar	10·4	Lanark	7·4
		Orkney	1·0	Perth	8·1	Linlithgow .	8·0
North-Western	5·0	Caithness	10·3	Fife	7·8	Edinburgh .	7·3
North-Eastern	14·2	Sutherland....	7·5	Kinross	9·6	Haddington	8·2
East Midland..	9·0	Ross and Cromarty	3·8	Clackmannan	5·1	Berwick	15·0
						Peebles	8·4
West Midland.	5·6	Inverness	6·1	Stirling	5·6	Selkirk	6·6
		Nairn	11·7	Dumbarton ..	5·5	Roxburgh ..	10·9
South-Western	7·4	Elgin	16·5	Argyll	6·2	Dumfries	15·4
South-Eastern.	7·8	Banff	15·1	Bute	4·2	Kirkcudbright ..	11·5
		Aberdeen	13·7	Renfrew.....	6·5		
Southern	13·9	Kincardine....	14·9	Ayr.....	8·3	Wigtown	17·7

IV.—*Divisional Table:*—Marriages, Births, *and* Deaths *Registered in the Quarter ended* 31*st December*, 1876.

1 DIVISIONS. (Scotland)	2 Area in Statute Acres.	3 Population, 1871. (*Persons.*)	4 Marriages.	5 Births.	6 Deaths.
		No.	No.	No.	No.
Scotland ..... *Totals*	19,639,377	3,360,018	7,546	30,538	17,093
I. Northern	2,261,622	127,191	219	860	495
II. North-Western.....	4,739,876	166,351	253	1,159	650
III. North-Eastern	2,429,594	393,199	902	3,309	1,598
IV. East Midland	2,790,492	559,676	1,210	4,739	2,560
V. West Midland	2,693,176	251,088	517	2,073	1,314
VI. South-Western.....	1,462,397	1,183,218	2,958	12,766	7,293
VII. South-Eastern	1,192,524	475,523	1,083	4,181	2,363
VIII. Southern	2,069,696	203,772	404	1,451	820

No. III.—GREAT BRITAIN AND IRELAND.

Summary *of* Marriages, *in the Quarter ended* 30*th September*, 1876; *and* Births *and* Deaths, *in the Quarter ended* 31*st December*, 1876.

Countries.	[000's omitted.] Area in Statute Acres.	[000's omitted.] Population, 1871. (*Persons.*)	Marriages.	Per 1,000 of Population.	Births.	Per 1,000 of Population.	Deaths.	Per 1,000 of Population.
		No.	No.	Ratio.	No.	Ratio.	No.	Ratio.
England and Wales	37,319,	22,712,	49,135	2·2	215,451	9·5	121,918	5·4
Scotland	19,639,	3,360,	5,895	1·8	30,538	9·0	17,093	5·0
Ireland	20,323,	5,412,	5,367	1·0	23,187	4·3	19,976	3·7
Great Britain and Ireland	77,281,	31,484,	60,397	1·9	279,176	8·9	158,987	5·0

Note.—The numbers against Ireland represent the marriages, births, and deaths that the local registrars have *succeeded* in recording; but how far the registration approximates to absolute completeness, does not at present appear to be known. It will be seen that the Irish ratios of marriages, births, and deaths are much under those of England and Scotland.—Ed. *S. J.*

Trade of United Kingdom, 1876-75-74.—*Distribution of* **Exports*** *from United Kingdom, according to the Declared Real Value of the Exports; and the Declared Real Value (Ex-duty) of* **Imports** *at Port of Entry, and therefore including Freight and Importer's Profit.*

Merchandise (*excluding Gold and Silver*) Imported from, and Exported to, the following Foreign Countries, &c. [000's omitted.]	Whole Years. 1876. Imports from	1876. *Exports to*	1875. Imports from	1875. *Exports to*	1874. Imports from	1874. *Exports to*
I.—Foreign Countries:	£	£	£	£	£	£
Northern Europe; viz., Russia, Sweden, Norway, Denmark & Iceland, & Heligoland	32,430,	12,619,	33,805,	14,944,	36,238,	16,706,
Central Europe; viz., Germany, Holland, and Belgium	51,568,	37,710,	51,400,	42,198,	49,345,	45,040,
Western Europe; viz., France, Portugal (with Azores, Madeira, &c.), and Spain (with Gibraltar and Canaries)	58,200,	23,758,	60,800,	21,725,	60,357,	24,847,
Southern Europe; viz., Italy, Austrian Empire, Greece, Ionian Islands, and Malta	6,990,	9,237,	7,912,	9,301,	6,190,	9,260,
Levant; viz., Turkey, with Wallachia and Moldavia, Syria and Palestine, and Egypt	20,046,	9,259,	17,926,	9,885,	17,048,	11,845,
Northern Africa; viz., Tripoli, Tunis, Algeria and Morocco	1,517,	674,	1,626,	622,	1,444,	597,
Western Africa	1,478,	1,018,	1,740,	798,	1,913,	881,
Eastern Africa; with African Ports on Red Sea, Aden, Arabia, Persia, Bourbon, and Kooria Mooria Islands	416,	374,	496,	386,	362,	397,
Indian Seas, Siam, Sumatra, Java, Philippines; other Islands	3,095,	2,416,	3,118,	2,689,	2,889,	1,768,
South Sea Islands	123,	45,	118,	38,	70,	—
China and Japan, including **Hong Kong**	17,016,	9,722,	15,202,	10,995,	12,540,	9,715,
United States of America	75,429,	16,804,	69,549,	21,874,	74,109,	28,035,
Mexico and Central America	1,597,	1,218,	2,020,	1,732,	1,660,	1,383,
Foreign West Indies, Hayti, &c.	3,527,	2,857,	4,417,	4,031,	4,526,	2,972,
South America (Northern), New Granada, Venezuela, and Ecuador	967,	1,696,	1,235,	1,781,	1,324,	3,147,
„ **(Pacific)**, Peru, Bolivia, Chili, and Patagonia	9,625,	3,134,	9,557,	3,902,	9,537,	4,386,
„ **(Atlantic)** Brazil, Uruguay, and Buenos Ayres	7,595,	8,455,	9,971,	9,967,	9,717,	12,036,
Whale Fisheries; Grnlnd., Davis' Straits, Southn. Whale Fishery, & Falkland Islands	171,	—	164,	20,	175,	19,
Total—Foreign Countries	291,790,	140,996,	291,056,	156,888,	289,446,	173,049,
II.—British Possessions:						
British India, Ceylon, and Singapore	35,812,	25,458,	37,778,	28,291,	37,478,	27,927,
Austral. Cols.—N. So. W., Vict., and Queensld.	14,342,	11,890,	13,409,	13,239,	11,758,	12,185,
„ „ So. Aus., W. Aus., Tasm., and N. Zealand	7,623,	5,763,	7,130,	6,243,	6,761,	6,886,
British North America	10,946,	7,369,	10,156,	9,029,	11,772,	9,413,
„ W. Indies with Btsh. Guiana & Honduras	7,190,	3,064,	7,490,	3,111,	6,406,	4,303,
Cape and Natal	4,187,	4,366,	4,487,	4,909,	4,291,	3,428,
Brt. W. Co. of Af., Ascension and St. Helena	874,	741,	609,	789,	608,	383,
Mauritius	938,	342,	822,	354,	1,042,	546,
Channel Islands	676,	587,	693,	641,	663,	816,
Total—British Possessions	82,588,	59,580,	82,574,	66,606,	80,779,	66,387,
General Total £	374,378,	200,576,	373,630,	223,494,	370,225,	239,436,

* *i.e.*, British and Irish produce and manufactures.

I.—*Population, Area, Abstract of Acreage under Crops, &c., and Number of Live*

	Years.	England.	Wales.	Scotland.	Total for Great Britain.
Total population	1871	21,495,	1,217,	3,360,	26,072,
Total area of land of all descriptions and of water (in statute acres)	—	32,597,	4,721,	19,496,	56,815,
Abstract of Acreage—					
Under all kinds of crops, bare fallow, and grass	1875	24,112,	2,696,	4,607,	31,416,
	'76	24,194,	2,712,	4,637,	31,544,
Under corn crops (including beans and peas)	'75	7,528,	512,	1,410,	9,451,
	'76	7,278,	498,	1,407,	9,184,
Under green crops	'75	2,848,	131,	684,	3,664,
	'76	2,754,	129,	689,	3,574,
„ bare fallow	'75	515,	25,	16,	557,
	'76	607,	25,	17,	651,
„ grass—Clover, &c., under rotation	'75	2,608,	360,	1,385,	4,354,
	'76	2,787,	360,	1,393,	4,540,
„ „ permanent pasture	'75	10,536,	1,666,	1,110,	13,312,
	'76	10,688,	1,697,	1,129,	13,515,
*Percentage of Acreage—**					
Under corn crops (including beans and peas)	1875	31·2	19·0	30·6	30·1
	'76	30·1	18·4	30·3	29·1
Under green crops	'75	11·8	4·9	14·8	11·7
	'76	11·4	4·8	14·9	11·3
„ bare fallow	'75	2·1	0·9	0·4	1·8
	'76	2·5	0·9	0·4	2·1
„ grass—Clover, &c., under rotation	'75	10·8	13·4	30·1	13·9
	'76	11·5	13·3	30·0	14·4
„ „ permanent pasture	'75	43·7	61·8	24·1	42·4
	'76	44·2	62·6	24·4	42·9
Total	—	100·0	100·0	100·0	100·0
Acreage of orchards, or of arable or grass land, used also for fruit trees	1876	153,	2,	1,	157,
Acreage of woods, coppices, and plantations	'72	1,325,	126,	734,	2,187,
Abstract of Live Stock—					
Total number of horses†	1875	1,031,	124,	183,	1,340,
	'76	1,057,	128,	188,	1,374,
„ cattle	'75	4,218,	651,	1,143,	6,012,
	'76	4,076,	638,	1,131,	5,846,
„ sheep	'75	19,114,	2,951,	7,100,	29,167,
	'76	18,320,	2,863,	6,989,	28,172,
„ pigs	'75	1,875,	203,	151,	2,229,
	'76	1,924,	215,	154,	2,293,
Number to every 100 *Acres under Crops, Fallow, and Grass—*					
Horses†	1875	4·3	4·6	4·0	4·3†
	'76	4·4	4·7	4·1	4·4†
Cattle	'75	17·5	24·2	24·8	19·1
	'76	16·8	23·6	24·4	18·5
Sheep	'75	79·3	109·5	154·1	92·8
	'76	75·7	105·6	150·7	89·3
Pigs	'75	7·8	7·5	3·3	7·1
	'76	8·0	7·9	3·3	7·3

* Stated exclusively of the small percentages for flax and hops.

† Only horses used for agriculture, unbroken horses, and mares kept solely for breeding, are included in the returns.

Stock, in each Division of the United Kingdom. [000's omitted from the quantities.]

Ireland.‡	Isle of Man.	Channel Islands. Jersey.	Channel Islands. Guernsey, &c.	Total for United Kingdom.	Years.	
5,412,	54,	56,	33,	31,629,	1871	Total population
20,819,	145,	28,	19,	77,828,	—	Total area of land of all descriptions and of water (in statute acres)
						Abstract of Acreage—
15,774,§	91,	19,	12,	47,313,	1875	Under all kinds of crops, bare fallow, and grass
15,724,§	93,	19,	11,	47,393,	'76	
1,916,	25,	3,	1,	11,399,	'75	Under corn crops (including beans and peas)
1,848,	26,	3,	1,	11,064,	'76	
1,370,	11,	7,	3,	5,057,	'75	Under green crops
1,363,	12,	7,	3,	4,960,	'76	
11,	—	—	—	570,	'75	„ bare fallow
11,	—	—	—	663,	'76	
1,943,	35,	3,	1,	6,337,	'75	„ grass—Clover, &c., under rotation
1,861,	34,	3,	1,	6,441,	'76	
10,431,	18,	5,	4,	23,772,	'75	„ „ permanent pasture
10,507,	20,	4,	5,	24,053,	'76	
						*Percentage of Acreage—**
12·1	28·4	16·1	16·3	24·1	1875	Under corn crops (including beans and peas)
11·8	28·2	17·4	17·2	23·3	'76	
8·7	12·9	38·4	30·7	10·7	'75	Under green crops
8·7	12·9	38·2	28·6	10·5	'76	
0·1	0·5	1·3	0·3	1·2	'75	„ bare fallow
0·1	0·3	0·6	0·7	1·4	'76	
12·3	38·4	17·3	12·1	13·4	'75	„ grass—Clover, &c., under rotation
11·8	36·7	20·5	9·6	13·6	'76	
66·1	19·8	26·9	40·6	50·2	'75	„ „ permanent pasture
66·8	21·9	23·3	43·9	50·7	'76	
100·0	100·0	100·0	100·0	100·0	—	Total
—	—	1,	—	—	1876	Acreage of orchards, or of arable or grass land, used also for fruit trees
324,‖	—	—	—	—	'72	Acreage of woods, coppices, and plantations
						Abstract of Live Stock—
470,	5,	2,	2,	1,820,	1875	Total number of horses†
479,	5,	2,	1,	1,863,	'76	
4,111,	19,	11,	7,	10,162,	'75	„ cattle
4,113,	19,	11,	6,	9,997,	'76	
4,248,	74,	—	1,	33,491,	'75	„ sheep
4,007,	70,	—	1,	32,252,	'76	
1,249,	4,	5,	5,	3,495,	'75	„ pigs
1,424,	6,	5,	4,	3,734,	'76	
						Number to every 100 *Acres under Crops, Fallow, and Grass—*
3·0	5·8	11·5	16·8	3·9	1875	Horses†
3·0	5·6	11·5	16·1	4·0	'76	
26·1	20·9	60·3	60·8	21·5	'75	Cattle
26·2	20·5	58·6	58·0	21·1	'76	
26·9	81·1	3·0	12·8	70·8	'75	Sheep
25·5	75·4	2·5	9·2	68·0	'76	
7·9	4·7	30·6	48·4	7·4	'75	Pigs
9·1	6·6	30·8	39·8	7·9	'76	

‡ The detailed returns for Ireland will be found in the annual reports prepared by the Registrar-General and laid before Parliament.

§ Including under flax, 101,248 acres in 1875, and 132,878 acres in 1876.

‖ As returned in 1876.

II.—*Acreage under Crops and Grass and Number*

1	2	3	4	5	6	7	8	9	10	11
			Number of Acres under Crops and Grass.					Per-centage of Corn Crops to Total under all kinds of Crops, Bare Fallow, and Grass.	Horses. — Number to every 100 Acres under Crops, Bare Fallow, and Grass.	Cattle. — Number to every 100 Acres under Crops, Bare Fallow, and Grass.
				Whereof under						
England. — Counties, Proper.	Population on 3rd April, 1871.	Total Area in Statute Acres.	Total under all kinds of Crops, Bare Fallow, and Grass.	Corn Crops.	Green Crops.	Clover and Artificial and other Grasses under Rotation.	Permanent Pasture, and Grass not broken up in Rotation (exclusive of Heath or Mountain Land).			
South-Eastern—										
Surrey	1,092,	483,	299,	98,	46,	31,	110,	32·7	4·6	14·2
Kent	848,	1,005,	732,	240,	82,	61,	294,	32·8	4·1	9·1
Sussex	417,	934,	656,	209,	78,	70,	267,	31·9	4·0	14·9
Hants	545,	1,032,	700,	254,	131,	119,	171,	36·3	4·1	8·4
Berks	196,	450,	370,	147,	56,	42,	114,	39·8	4·0	9·2
Total	3,098,	3,904,	2,757,	948,	393,	323,	956,	38·0	4·1	10·8
South Midland—										
Middlesex	2,540,	181,	117,	19,	14,	5,	79,	16·5	5·1	22·5
Hertford	192,	391,	338,	147,	42,	41,	94,	43·6	4·2	9·3
Buckingham	176,	467,	403,	133,	35,	30,	191,	33·0	4·3	16·1
Oxford	178,	470,	415,	163,	58,	46,	139,	39·2	4·1	12·5
Northampton	244,	630,	556,	178,	42,	38,	277,	32·0	3·9	19·8
Huntingdon	64,	230,	209,	101,	21,	15,	59,	48·3	4·7	11·8
Bedford	146,	296,	257,	115,	32,	21,	76,	45·0	4·4	12·2
Cambridge	187,	525,	484,	260,	85,	47,	76,	53·7	5·7	9·5
Total	3,727,	3,190,	2,779,	1,116,	329,	243,	991,	40·1	4·4	13·9
Eastern—										
Essex	466,	1,055,	826,	407,	105,	89,	185,	49·3	5·0	9·2
Suffolk	349,	950,	766,	384,	123,	89,	147,	50·1	5·6	7·9
Norfolk	439,	1,356,	1,067,	450,	206,	169,	234,	42·1	5·6	9·7
Total	1,254,	3,361,	2,659,	1,241,	434,	347,	566,	46·6	5·4	9·0
South-Western—										
Wilts	257,	859,	747,	222,	103,	85,	318,	29·6	3·0	11·6
Dorset	196,	627,	478,	112,	61,	58,	241,	23·4	3·3	15·9
Devon	601,	1,655,	1,094,	283,	152,	189,	443,	25·9	4·7	19·9
Cornwall	362,	870,	527,	143,	60,	139,	165,	27·2	5·8	29·6
Somerset	464,	1,050,	840,	144,	65,	67,	551,	17·2	3·9	24·0
Total	1,880,	5,061,	3,686,	904,	441,	538,	1,718,	24·4	4·1	20·0
West Midland—										
Gloucester	535,	805,	647,	173,	65,	90,	306,	26·7	3·8	17·2
Hereford	125,	533,	436,	105,	35,	44,	235,	24·2	4·8	17·5
Salop	248,	841,	698,	168,	64,	79,	375,	24·1	4·3	19·9
Stafford	858,	732,	594,	114,	43,	55,	371,	19·1	3·8	22·3
Worcester	339,	472,	393,	118,	30,	35,	190,	30·0	4·9	14·3
Warwick	634,	567,	481,	143,	32,	45,	248,	29·3	4·0	19·0
Total	2,739,	3,950,	3,255,	821,	269,	348,	1,725,	25·2	4·4	18·9

* For the Irish Statistics,

of Live Stock in 1876. [000's omitted, consequently 3,098, = 3,098,000.]

12	13	14	15	16	17	18	19	20	21	22	23	24
		Number of Acres Under										
Sheep. — Number to every 100 Acres under Crops, Bare Fallow, and Grass.	Pigs. — Number to every 100 Acres under Crops, Bare Fallow, and Grass.	Wheat.	Barley or Bere.	Oats.	Beans.	Peas.	Potatoes.	Turnips and Swedes.	Mangold.	Vetches, Lucerne, and any other Crops except Clover and Grass.	Bare Fallow, and Uncropped Arable Land.	England. — Counties, Proper.
												South-Eastern
30·0	10·5	40,	19,	28,	3,	7,	4,	20,	9,	9,	12,	Surrey
130·8	8·1	96,	45,	57,	21,	20,	14,	29,	12,	20,	10,	Kent
83·4	6·2	94,	23,	68,	9,	14,	3,	33,	12,	19,	21,	Sussex
79·0	8·7	104,	63,	69,	6,	10,	5,	83,	12,	22,	22,	Hants
75·9	9·5	57,	39,	29,	13,	8,	1,	35,	5,	12,	10,	Berks
88·0	8·2	391,	189,	251,	52,	59,	27,	200,	50,	82,	75,	Total
												South Midland
31·3	10·5	8,	2,	5,	1,	2,	3,	2,	2,	6,	—	Middlesex
52·3	9·4	57,	48,	27,	10,	5,	2,	26,	5,	7,	14,	Hertford
67·7	8·7	49,	32,	28,	17,	7,	2,	21,	4,	7,	13,	Buckingham
79·3	8·4	55,	56,	26,	18,	8,	2,	39,	5,	10,	9,	Oxford
92·6	5·4	65,	62,	23,	21,	7,	2,	26,	5,	6,	21,	Northamptn.
74·8	8·6	42,	28,	15,	10,	7,	3,	4,	4,	7,	12,	Huntingdon
63·9	10·8	47,	34,	12,	16,	6,	5,	13,	4,	7,	13,	Bedford
70·1	9·1	126,	66,	33,	25,	9,	10,	18,	18,	20,	16,	Cambridge
71·5	8·4	449,	328,	169,	118,	51,	29,	149,	47,	60,	98,	Total
												Eastern—
45·2	11·1	169,	115,	48,	44,	30,	11,	26,	31,	31,	40,	Essex
56·7	15·7	141,	149,	17,	42,	27,	2,	59,	36,	22,	23,	Suffolk
61·9	8·0	187,	195,	32,	18,	9,	5,	139,	46,	12,	7,	Norfolk
55·2	11·2	497,	459,	97,	104,	66,	18,	224,	113,	65,	70,	Total
												South-Western
94·8	7·8	92,	69,	37,	13,	9,	3,	61,	5,	23,	19,	Wilts
105·9	8·8	41,	40,	23,	3,	3,	3,	42,	5,	7,	7,	Dorset
86·3	8·3	113,	78,	90,	1,	1,	15,	85,	29,	6,	26,	Devon
82·9	11·8	46,	53,	45,	—	—	6,	30,	13,	1,	20,	Cornwall
80·7	10·6	68,	36,	23,	14,	3,	9,	35,	10,	7,	11,	Somerset
88·2	9·2	360,	276,	218,	31,	16,	36,	253,	62,	44,	83,	Total
												West Midland
64·2	8·4	82,	44,	20,	18,	8,	6,	43,	3,	11,	14,	Gloucester
76·2	5·7	50,	25,	14,	9,	7,	2,	26,	2,	5,	11,	Hereford
69·0	8·3	71,	57,	28,	5,	5,	5,	51,	5,	2,	11,	Salop
48·7	8·7	42,	33,	32,	3,	3,	7,	27,	4,	4,	12,	Stafford
54·9	9·7	57,	22,	10,	20,	9,	5,	15,	3,	7,	17,	Worcester
75·2	8·2	62,	31,	19,	24,	7,	2,	20,	4,	5,	19,	Warwick
64·5	8·5	364,	212,	123,	79,	39,	27,	182,	21,	34,	84,	Total

see *ante*, Table I, p. 157.

II.—*Acreage under Crops and Grass and Number of Live*

1	2	3	4	5	6	7	8	9	10	11
			Number of Acres under Crops and Grass.					Per-centage of Corn Crops to Total under all kinds of Crops, Bare Fallow, and Grass.	Horses. — Number to every 100 Acres under Crops, Bare Fallow, and Grass.	Cattle. — Number to every 100 Acres under Crops, Bare Fallow, and Grass.
				Whereof under						
England. — Counties, Proper.	Population on 3rd April, 1871.	Total Area in Statute Acres.	Total under all kinds of Crops, Bare Fallow, and Grass.	Corn Crops.	Green Crops.	Clover and Artificial and other Grasses under Rotation.	Permanent Pasture, and Grass not broken up in Rotation (exclusive of Heath or Mountain Land).			
North Midland—										
Leicester	269,	512,	470,	103,	25,	34,	293,	22·0	3·8	27·3
Rutland	22,	95,	85,	26,	8,	8,	41,	30·9	3·7	19·6
Lincoln	437,	1,768,	1,475,	620,	239,	170,	420,	42·0	4·3	13·7
Nottingham	320,	526,	444,	156,	53,	58,	157,	35·1	4·5	16·6
Derby	379,	656,	503,	69,	22,	36,	365,	13·7	4·1	26·8
Total	1,427,	3,557,	2,977,	974,	347,	306,	1,276,	32·8	4·1	18·6
North-Western—										
Chester	561,	706,	525,	80,	32,	56,	354,	15·2	4·1	30·5
Lancaster	2,820,	1,208,	764,	100,	50,	73,	538,	13·1	4·7	30·4
Total	3,381,	1,914,	1,289,	180,	82,	129,	892,	13·9	4·4	30·4
York—										
West Riding	1,821,	1,716,	1,173,	232,	99,	95,	725,	19·8	4·4	20·2
East „	322,	805,	672,	277,	112,	90,	170,	41·3	5·7	12·0
North „	293,	1,362,	835,	220,	81,	79,	427,	26·3	4·8	18·4
Total	2,436,	3,883,	2,680,	729,	292,	264,	1,322,	27·2	4·8	17·6
Northern—										
Durham	685,	648,	410,	91,	34,	58,	206,	22·2	4·3	14·9
Northumberland	387,	1,290,	681,	122,	61,	95,	387,	17·9	2·7	13·7
Cumberland	220,	970,	549,	95,	48,	96,	306,	17·2	3·6	23·4
Westmorland	65,	501,	239,	20,	11,	16,	192,	8·5	3·2	25·3
Total	1,357,	3,409,	1,879,	328,	154,	265,	1,091,	17·4	3·3	18·2
Total of England	21,299,	32,229,	23,961,	7,241,	2,741,	2,763,	10,537,	30·2	4·3	16·6
Wales—										
Monmouth	196,	368,	233,	37,	14,	24,	152,	16·1	4·6	18·1
South Wales	764,	2,727,	1,599,	284,	71,	189,	1,040,	17·7	4·9	21·7
North „	453,	1,995,	1,113,	215,	58,	171,	658,	19·2	4·5	25·4
Total of Wales	1,413,	5,090,	2,945,	536,	143,	384,	1,850,	18·2	4·7	23·1
Total of Scotland	3,360,	19,496,	4,638,	1,408,	690,	1,393,	1,129,	30·3	4·1	24·4
Total of Great Britain	26,072,	56,815,	31,544,	9,185,	3,574,	4,540,	13,516,	29·1	4·4	18·5

* For the Irish Statistics,

Stock in 1876—*Contd.* [000's omitted, consequently 1,427, = 1,427,000.]

12 Sheep. — Number to every 100 Acres under Crops, Bare Fallow, and Grass.	13 Pigs. — Number to every 100 Acres under Crops, Bare Fallow, and Grass.	14	15	16	17	18	19	20	21	22	23	24
		Number of Acres Under										England. — Counties, Proper.
		Wheat.	Barley or Bere.	Oats.	Beans.	Peas.	Potatoes.	Turnips and Swedes.	Mangold.	Vetches, Lucerne, and any other Crops except Clover and Grass.	Bare Fallow, and Uncropped Arable Land.	
												North Midland
91·1	5·4	32,	37,	23,	8,	3,	2,	15,	5,	3,	14,	Leicester
113·8	4·0	7,	12,	4,	2,	1,	—	6,	—	1,	3,	Rutland
102·3	6·8	274,	186,	99,	39,	20,	38,	137,	20,	23,	25,	Lincoln
61·8	6·3	61,	54,	23,	9,	8,	6,	37,	4,	6,	20,	Nottingham
48·3	7·6	22,	16,	29,	1,	1,	3,	12,	1,	3,	10,	Derby
86·0	6·5	396,	305,	178,	59,	33,	49,	207,	30,	36,	72,	Total
												North-Western
20·4	12·4	24,	3,	47,	4,	—	19,	9,	2,	1,	2,	Chester
42·5	5·6	30,	10,	53,	5,	—	32,	12,	2,	2,	4,	Lancaster
33·4	8·3	54,	13,	100,	9,	—	51,	21,	4,	3,	6,	Total
												York—
62·0	5·9	78,	80,	60,	9,	5,	24,	61,	3,	9,	20,	West Riding
73·9	7·8	97,	78,	77,	11,	12,	10,	79,	5,	8,	21,	East „
84·6	6·8	53,	82,	71,	9,	3,	9,	61,	2,	4,	30,	North „
71·9	6·5	228,	240,	208,	29,	20,	43,	201,	10,	21,	71,	Total
												Northern—
49·3	3·0	28,	23,	36,	2,	1,	7,	22,	—	4,	21,	Durham
132·5	2·0	22,	43,	52,	4,	2,	7,	50,	—	9,	16,	Northumberland
93·9	4·9	17,	8,	69,	—	—	10,	35,	1,	—	5,	Cumberland
138·7	2·3	1,	2,	16,	—	—	2,	8,	—	—	1,	Westmorlnd.
103·9	3·1	68,	76,	173,	6,	3,	26,	115,	1,	13,	43,	Total
74·9	7·8	2,807,	2,098,	1,517,	487,	287,	306,	1,552,	338,	358,	602,	Total of England
												Wales—
83·5	6·3	16,	11,	9,	1,	1,	2,	9,	1,	2,	6,	Monmouth
96·4	6·6	49,	96,	136,	—	1,	21,	41,	4,	4,	15,	South Wales
118·7	9·7	45,	58,	106,	4,	2,	21,	31,	3,	2,	10,	North „
103·8	7·7	110,	165,	251,	5,	4,	44,	81,	8,	8,	31,	Total of Wales
150·9	3·3	78,	270,	1,022,	26,	2,	155,	513,	2,	14,	18,	Total of Scotland
89·3	7·3	2,995,	2,533,	2,790,	518,	293,	505,	2,146,	348,	380,	651,	Total of Gt. Britain

see Table I, p. 157

IMPORTS.—(United Kingdom.)—**Whole Years, 1876-75-74-73-72.**—*Declared Real Value (Ex-duty), at Port of Entry (and therefore including Freight and Importer's Profit), of Articles of Foreign and Colonial Merchandise Imported into the United Kingdom.*

(Whole Years.) [000's omitted.] Foreign Articles Imported.		1876.	1875.	1874.	1873.	1872.
		£	£	£	£	£
Raw Matls.–*Textile*,&c.	Cotton Wool	40,347,	46,320,	50,937,	54,887,	53,617,
	Wool (Sheep's)..	24,980,	22,889,	22,640,	20,699,	19,862,
	Silk*.....	16,250,	10,546,	15,713,	15,519,	14,501,
	Flax	3,537,	4,380,	5,545,	5,295,	4,998,
	Hemp	1,952,	2,246,	2,211,	2,319,	6,266,
	Indigo	2,130,	1,621,	2,153,	2,438,	2,479,
		89,196,	88,002,	99,199,	101,157,	101,723,
„ „	*Various.* Hides	6,273,	7,005,	6,815,	6,673,	6,733,
	Oils	4,786,	5,368,	4,778,	5,556,	4,649,
	Metals	10,252,	12,685,	11,109,	10,991,	9,207,
	Tallow	2,874,	2,037,	2,318,	3,133,	2,835,
	Timber.....	19,025,	15,362,	21,831,	19,665,	15,753,
		43,210,	42,457,	46,851,	45,018,	37,177,
„ „	*Agricltl.* Guano	2,462,	1,292,	1,342,	2,112,	1,183,
	Seeds	8,970,	8,789,	7,470,	7,129,	7,278,
		11,432,	10,081,	8,812,	9,241,	8,461,
Tropical, &c., Produce.	Tea	12,813,	14,167,	11,573,	11,539,	12,982,
	Coffee	6,413,	7,605,	7,103,	7,319,	5,295,
	Sugar & Molasses	20,620,	21,917,	16,083,	21,436,	18,490,
	Tobacco	3,946,	2,987,	3,875,	4,003,	2,801,
	Rice	2,927,	2,991,	3,622,	2,338,	3,474,
	Fruits	3,839,	3,789,	3,349,	3,051,	3,916,
	Wines	7,020,	6,821,	6,868,	8,304,	7,722,
	Spirits	3,963,	2,885,	2,612,	3,297,	2,192,
		61,541,	63,162,	55,085,	62,188,	56,872,
Food	Grain and Meal.	51,550,	52,714,	50,753,	51,521,	50,987,
	Provisions	32,837,	25,752,	25,868,	23,812,	18,912,
		84,387,	78,466,	76,621,	75,333,	69,899,
Remainder of Enumerated Articles		45,938,	52,973,	45,594,	42,144,	44,283,
Total Enumerated Imports		335,704,	335,141,	332,162,	335,081,	318,415,
Add for Unenumerated Imports (say)		38,300,	38,800,	36,273,	35,300,	34,960,
Total Imports		374,004,	373,941,	368,435,	370,381,	353,375,

* "Silk," inclusive of manufactured silk, "not made up."

EXPORTS.—(United Kingdom.)—**Whole Years, 1876-75-74-73-72.**—*Declared Real Value, at Port of Shipment, of Articles of* BRITISH *and* IRISH *Produce and Manufactures Exported from United Kingdom.*

(Whole Years.) [000's omitted.] BRITISH PRODUCE, &c., EXPORTED.		1876.	1875.	1874.	1873.	1872.
		£	£	£	£	£
MANFRS.—*Textile.*	Cotton Manufactures..	54,851,	58,565,	59,716,	61,447,	63,419,
	,, Yarn	12,783,	13,170,	14,516,	15,876,	16,710,
	Woollen Manufactures	18,620,	21,649,	22,795,	25,279,	32,384,
	,, Yarn	4,417,	5,102,	5,559,	5,404,	6,110,
	Silk Manufactures.....	1,769,	1,738,	2,100,	1,876,	2,189,
	,, Yarn	1,073,	878,	1,030,	1,688,	1,895,
	Linen Manufactures	5,621,	7,271,	7,124,	7,295,	8,248,
	,, Yarn	1,460,	1,855,	1,721,	1,976,	2,142,
		100,594,	110,228,	114,561,	120,821,	133,097,
,, *Sewed.*	Apparel	2,962,	3,185,	3,197,	3,434,	3,095,
	Haberdy. and Mllnry.	3,771,	4,922,	6,131,	6,598,	6,629,
		6,733,	8,107,	9,328,	10,032,	9,724,
METALS, &c.	Hardware	3,481,	4,265,	4,413,	4,938,	5,089,
	Machinery	7,198,	9,099,	9,771,	9,994,	8,199,
	Iron	20,731,	25,781,	31,225,	37,780,	36,061,
	Copper and Brass.....	3,401,	3,730,	3,814,	3,821,	3,626,
	Lead and Tin	1,202,	1,300,	1,648,	1,548,	1,760,
	Coals and Culm	8,901,	9,646,	11,954,	13,206,	10,444,
		44,914,	53,821,	62,825,	71,287,	65,179,
Ceramic Manufcts.	Earthenware and Glass	2,577,	2,812,	3,152,	3,408,	3,113,
Indigenous Mnfrs. and Products.	Beer and Ale.....	1,922,	2,090,	2,451,	2,420,	2,085,
	Butter	210,	240,	256,	266,	307,
	Cheese	70,	88,	82,	81,	83,
	Candles	151,	177,	187,	221,	223,
	Salt.....	529,	676,	663,	789,	529,
	Spirits	312,	277,	152,	212,	224,
	Soda	—	2,300,	2,602,	2,931,	—
		3,194,	5,848,	6,393,	6,920,	3,451,
Various Manufcts.	Books, Printed	877,	915,	899,	913,	883,
	Furniture	—	—	—	—	—
	Leather Manufactures	3,343,	382,	3,547,	3,417,	3,664,
	Soap	312,	311,	277,	241,	304,
	Plate and Watches	247,	304,	285,	278,	232,
	Stationery	659,	684,	688,	673,	661,
		5,438,	2,596,	5,696,	5,522,	5,744,
Remainder of Enumerated Articles		19,796,	22,882,	20,321,	19,433,	19,855,
Unenumerated Articles..		17,330,	17,200,	17,160,	17,650,	15,798,
TOTAL EXPORTS.....		200,576,	223,494,	239,436,	255,073	255,961,

SHIPPING.—(United Kingdom.)—*Account of Tonnage of Vessels Entered and Cleared with Cargoes, from and to Various Countries, during the* **Twelve Months** *ended December*, 1876-75-74.

Countries from whence Entered and to which Cleared.	Total British and Foreign.					
	1876.		1875.		1874.	
	Entered.	Cleared.	Entered.	Cleared.	Entered.	Cleared.
FOREIGN COUNTRIES.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Russia { Northern ports	1,347,886	947,410	1,268,269	847,974	1,484,558	868,530
Russia { Southern „	304,843	197,537	432,482	165,318	286,789	157,402
Sweden	1,324,051	733,273	1,028,487	681,778	1,224,786	633,372
Norway	814,909	419,811	663,194	434,617	793,966	378,949
Denmark	215,169	659,497	199,687	630,654	157,159	567,215
Germany	1,448,435	2,427,213	1,483,464	2,369,927	1,548,523	2,250,688
Holland	1,130,599	1,301,758	1,083,359	1,106,300	860,646	998,532
Belgium	937,254	1,023,700	852,447	972,947	820,140	865,604
France	1,869,971	3,061,668	1,880,874	2,744,622	1,704,388	2,438,363
Spain	836,126	656,192	650,930	610,563	751,430	526,838
Portugal	195,262	336,861	266,612	323,316	271,685	299,272
Italy	288,482	947,649	314,391	895,909	226,713	809,919
Austrian territories	25,640	88,350	40,820	87,624	28,933	93,021
Greece	50,060	67,203	121,756	75,676	120,133	79,295
Turkey (including Wallachia and Moldavia)	524,107	325,041	308,436	303,283	253,817	337,797
Egypt	418,332	487,426	312,275	479,024	255,226	527,758
United States of America	4,013,481	2,146,493	3,264,668	1,996,751	3,510,184	2,102,736
Mexico, Foreign West Indies, and Central America	254,401	415,191	307,849	462,037	294,291	441,245
Brazil	194,651	423,680	247,406	468,724	213,386	517,697
Peru	288,892	102,279	244,955	113,272	218,510	119,841
Chili	60,475	206,372	65,943	289,763	96,679	289,922
China	136,843	23,347	136,815	32,675	102,999	22,243
Other countries	573,197	578,971	546,129	593,884	477,487	647,084
Total, Foreign Countries	17,253,066	17,576,922	15,721,248	16,686,638	15,702,428	15,973,323
BRITISH POSSESSIONS.						
North American Colonies	1,512,571	678,960	1,240,334	607,039	1,500,419	706,450
East Indies, including Ceylon, Singapore, and Mauritius	1,191,255	1,543,096	1,096,454	1,437,812	985,093	1,374,761
Australia and New Zealand	346,478	523,524	262,822	595,783	246,069	568,603
West Indies	214,684	162,201	252,459	167,021	203,399	133,500
Channel Islands	265,924	172,121	248,772	167,783	233,005	158,541
Other possessions	235,390	846,782	205,738	753,836	212,304	835,363
Total, British Possessions	3,766,302	3,926,684	3,306,579	3,729,274	3,380,289	3,777,218
TOTAL FOREIGN COUNTRIES AND BRITISH POSSESSIONS.						
Twelve months ended December, 1876	21,019,368	21,503,606	—	—	—	—
Twelve months ended December, '75	—	—	19,027,827	20,415,912	—	—
Twelve months ended December, '74	—	—	—	—	19,082,717	19,750,541

GOLD AND SILVER BULLION AND SPECIE.—IMPORTED AND EXPORTED.—(United Kingdom.)—*Declared Real Value for the* **Whole Years, 1876-75-74.**

[000's omitted.]

(Whole Years.)	1876.		1875.		1874.	
	Gold.	*Silver.*	Gold.	*Silver.*	Gold.	*Silver.*
Imported from—	£	£	£	£	£	£
Australia	4,957,	15,	6,641,	33,	6,721,	21,
So. Amca., including Mexico and W. Indies	2,442,	3,145,	1,644,	3,432,	2,864,	3,996,
United States	4,372,	2,637,	8,258,	3,181,	4,509,	3,477,
	11,771,	5,797,	16,543,	6,646,	14,094,	7,494,
France	1,427,	1,341,	2,023,	1,392,	740,	1,172,
Germany, Holl. & Belg.	2,682,	5,538,	739,	1,226,	282,	2,771,
Prtgl., Spain, and Gbrltr.	545,	45,	120,	48,	80,	76,
Mlta. and Egypt	398,	25,	654,	26,	264,	25,
China, including Hong Kong	809,	16,	342,	114,	283,	372,
West Coast of Africa	146,	22,	117,	24,	136,	41,
All other Countries	5,699,	797,	2,603,	649,	2,202,	346,
Totals Imported	23,477,	13,581,	23,141,	10,124,	18,081,	12,298,
Exported to—						
France	4,189,	1,833,	5,252,	2,450,	5,434,	1,322,
Germany, Holl. & Belg.	2,684,	592,	8,614,	465,	1,137,	964,
Prtgl., Spain, and Gbrltr.	2,367,	203,	1,223,	1,695,	359,	1,895,
	9,240,	2,628,	15,089,	4,610,	6,930,	4,181,
Ind. and China	217,	9,492,*	78,	4,094,	—	6,708,
United States	3,524,	378,	577,	89,	9,	25,
South Africa	230,	5,	—	15,	11,	21,
So. Amca., including Mexico and W. Indies	1,199,	178,	1,961,	57,	1,877,	108,
All other Countries	2,105,	267,	943,	114,	1,814,	1,169,
Totals Exported	16,515,	12,948,	18,648,	8,979,	10,641,	12,212,
Excess of imports	6,962,	633,	4,493,	1,255,	7,440,	86,
„ exports	—	—	—	—	—	—

* This entry is now shown direct, instead of to Egypt as formerly.

REVENUE.—(UNITED KINGDOM.)—31ST DECEMBER, 1876-75-74-73.

Net Produce in QUARTERS *and* YEARS *ended* 31*st* DEC., 1876-75-74-73.

[000's omitted.]

QUARTERS, ended 31st Dec.	1876.	1875.	1876.		Corresponding Quarters.	
			Less.	More.	1874.	1873.
	£	£	£	£	£	£
Customs	5,433,	5,506,	73,	—	5,360,	5,579,
Excise	7,053,	7,133,	80,	—	7,077,	6,862,
Stamps	2,692,	2,795,	103,	—	2,603,	2,606,
Taxes	39,	39,	—	—	48,	24,
Post Office	1,552,	1,511,	—	41,	1,470,	1,240,
Telegraph Service	330,	330,	—	—	300,	291,
	17,099,	17,314,	256,	41,	16,858,	16,602,
Property Tax	281,	211,	—	70,	251,	271,
	17,380,	17,525,	256,	111,	17,109,	16,873,
Crown Lands	141,	136,	—	5,	136,	135,
Miscellaneous	1,156,	1,102,	—	54,	1,059,	757,
Totals	18,677,	18,763,	256,	170,	18,304,	17,765,
			NET DECR. £86,			

YEARS, ended 31st Dec.	1876.	1875.	1876.		Corresponding Years.	
			Less.	More.	1874.	1873.
	£	£	£	£	£	£
Customs	20,075,	19,740,	—	335,	19,393,	20,740,
Excise	27,853,	27,857,	4,	—	27,368,	26,562,
Stamps	10,946,	10,878,	—	68,	10,458,	10,472,
Taxes	2,488,	2,456,	—	32,	2,438,	2,357,
Post Office	5,970,	5,933,	—	37,	5,750,	5,532,
Telegraph Service	1,295,	1,170,	—	125,	1,259,	1,131,
	68,627,	68,034,	4,	597,	66,666,	66,794,
Property Tax	4,095,	3,921,	—	174,	5,466,	6,831,
	72,722,	71,955,	4,	771,	72,132,	73,625,
Crown Lands	405,	395,	—	10,	381,	390,
Miscellaneous	4,352,	4,025,	—	327,	3,992,	3,698,
Totals	77,479,	76,375,	4,	1,108,	76,505,	77,713,
			NET INCR. £1,104,			

REVENUE.—UNITED KINGDOM.—QUARTER ENDED 31ST DEC., 1876:—

An Account showing the REVENUE *and other* RECEIPTS *in the* QUARTER *ended 31st December*, 1876; *the* ISSUES *out of the same, and the Charges on the Consolidated Fund at that Date, and the Surplus or Deficiency of the Balance in the Exchequer on the 31st of December*, 1876, *in respect of such Charges.*

Received:—

	£
Income received, as shown in Account I	18,677,507
Amount raised on account of Military Barracks, per Act 35 and 36 Vict., cap. 68	250,000
Amount received in Repayment of Advances for Public Works, &c.	407,494
„ for Greenwich Hospital and School	29,150
Total	£19,364,151
Excess of the Sums charged on the Consolidated Fund on the 31st of December, 1876, payable in March quarter, 1877, above the Balance in the Exchequer at that date, viz.:—	
Excess of Charge in Great Britain £6,124,462	
Surplus over Charge in Ireland 418,700	
Net deficiency	*5,705,762
	£25,069,913

Paid:—

			£
Net deficiency of the balance in the Exchequer to meet the charge on the 30th of September, 1876, as per last account			3,616,126
Amount applied out of the Income to *Supply Services*			11,380,983
„ advanced for Greenwich Hospital and School			29,150
Charge of the *Consolidated Fund* on the 31st of December, 1876, viz.:—			
Permanent Charge of Debt—			
Interest of the Permanent Debt	£6,052,559		
Terminable Annuities	2,249,580		
Interest of Exchequer Bills, &c.	35,805		
		8,337,944	
Interest on Local Loans		21,875	
Other Consolidated Fund Charges:—			
The Civil List	101,534		
Other Charges (including 250,000*l.* for Military Barracks)	549,339		
		650,873	
Principal of Exchequer Bills		6,700	
Advances for Public Works, &c.		1,026,262	
			10,043,654
Total			£25,069,913

* Charge on 31st of December, 1876 (as above)	£10,043,654
Paid out of Growing Produce in December quarter, 1876	1,476,301
Portion of the Charge payable in March quarter, 1877	8,567,353
To meet which there was in the Exchequer on the 31st of December, 1876	2,861,591
Net deficiency as above	5,705,762

BRITISH CORN.—*Gazette Average Prices* (ENGLAND AND WALES), *Fourth Quarter of* 1876.

[This Table is communicated by the Statistical, Commercial, and Corn Department, Board of Trade.]

Weeks ended on Saturday.	Weekly Average. (Per Impl. Quarter.)					
	Wheat.		Barley.		Oats.	
1876.	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
October 7	46	3	40	2	25	5
„ 14	46	2	39	5	25	10
„ 21	46	9	39	–	24	8
„ 28	47	1	38	9	25	2
Average for October	46	6	39	4	25	3
November 4	48	2	39	4	25	5
„ 11	48	3	39	3	25	10
„ 18	48	1	39	3	25	5
„ 25	47	5	39	4	25	9
Average for November	47	11	39	3	25	7
December 2	48	4	39	–	24	11
„ 9	49	1	38	10	25	4
„ 16	50	4	38	10	25	4
„ 23	50	8	38	7	25	2
„ 30	50	6	38	7	24	9
Average for December	49	9	38	9	25	1
Average for the quarter	48	2	39	1	25	3
„ year	46	2	35	2	26	3

BANK OF ENGLAND.—WEEKLY RETURN.

Pursuant to the Act 7th and 8th Victoria, c. 32 (1844), *for Wednesday in each Week, during the* FOURTH QUARTER (*October—December*) *of* 1876.

[0,000's omitted.]

1	2	3	4	5	6	7
ISSUE DEPARTMENT.					COLLATERAL COLUMNS.	
Liabilities.		Assets.				
Notes Issued.	DATES. (Wednesdays.)	Government Debt.	Other Securities.	Gold Coin and Bullion.	Notes in Hands of Public. (Col. 1 minus col. 16.)	Minimum Rates of Discount at Bank of England.
£ Mlns.	1876.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	1876. Per cnt.
49,12	Oct. 4	11,01	3,98	34,12	29,05	20 April 2
48,51	„ 11	11,01	3,98	33,51	29,10	
47,71	„ 18	11,01	3,98	32,71	28,96	
47,57	„ 25	11,01	3,98	32,57	28,54	
47,19	Nov. 1	11,01	3,98	32,19	28,79	
46,01	„ 8	11,01	3,98	31,01	28,50	
45,24	„ 15	11,01	3,98	30,24	28,03	
44,64	„ 22	11,01	3,98	29,64	27,80	
43,62	„ 29	11,01	3,98	28,62	27,56	
43,54	Dec. 6	11,01	3,98	28,54	27,61	
43,19	„ 13	11,01	3,98	28,19	27,19	
43,08	„ 20	11,01	3,98	28,08	27,46	
42,81	„ 27	11,01	3,98	27,81	27,90	

BANKING DEPARTMENT.

8	9	10	11	12	13	14	15	16	17	18
Liabilities.					DATES.	Assets.				Totals of Liabilities and Assets.
Capital and Rest.		Deposits.		Seven Day and other Bills.		Securities.		Reserve.		
Capital.	Rest.	Public.	Private.		(Wdnsdys.)	Government.	Other.	Notes.	Gold and Silver Coin.	
£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	1876.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.
14,55	3,68	6,38	27,20	,37	Oct. 4	15,71	15,91	19,88	,68	52,18
14,55	3,07	6,18	30,00	,42	„ 11	18,20	16,02	19,42	,58	54,22
14,55	3,07	5,42	29,86	,40	„ 18	17,80	16,11	18,75	,64	53,30
14,55	3,07	5,54	29,49	,36	„ 25	17,20	16,16	19,03	,62	53,01
14,55	3,06	5,78	29,10	,37	Nov. 1	17,01	16,64	18,40	,81	52,86
14,55	3,06	5,67	27,39	,37	„ 8	16,31	16,54	17,51	,68	51,04
14,55	3,07	5,57	26,54	,38	„ 15	15,73	16,50	17,21	,66	50,11
14,55	3,07	6,03	25,91	,37	„ 22	15,74	16,54	16,84	,81	49,93
14,55	3,03	6,54	24,92	,35	„ 29	15,74	16,75	16,07	,83	49,39
14,55	3,03	6,40	25,43	,31	Dec. 6	15,83	17,10	15,93	,85	49,72
14,55	3,04	7,23	24,50	,34	„ 13	15,83	17,02	16,00	,81	49,66
14,55	3,04	7,79	23,63	,32	„ 20	15,94	17,08	15,62	,69	49,33
14,55	3,04	8,17	22,88	,30	„ 27	15,96	17,52	14,91	,55	48,94

LONDON CLEARING; CIRCULATION, PRIVATE AND PROVINCIAL.

The London Clearing, and the Average Amount of Promissory Notes in Circulation in England *and* Wales *on Saturday in each Week during the* Fourth Quarter *(October—December) of* 1876; *and in* Scotland *and* Ireland, *at the Three Dates, as under.*

[0,000's omitted.]

England and Wales.					Scotland.				Ireland.		
Dates. *Saturday.*	*London:* Cleared in each Week ended *Wednesday.**	Private Banks. (Fixed Issues, 3,81).	Joint Stock Banks. (Fixed Issues, 2,65).	Total. (Fixed Issues, 6,46).	Weeks ended	£5 and upwards.	Under £5.	Total. (Fixed Issues, 2,74).	£5 and upwards.	Under £5.	Total. (Fixed Issues, 6,35).
1876.	£	£	£	£	1876.	£	£	£	£	£	£
Oct. 7	106,99	2,57	2,33	4,90							
„ 14	80,91	2,62	2,34	4,96							
„ 21	101,24	2,60	2,32	4,92							
„ 28	80,31	2,56	2,28	4,84	Oct. 28	2,10	4,07	6,17	4,45	3,58	8,03
Nov. 4	104,49	2,57	2,30	4,87							
„ 11	91,15	2,55	2,31	4,86							
„ 18	99,41	2,52	2,28	4,80							
„ 25	89,66	2,49	2,26	4,75	Nov. 25	2,54	4,47	7,01	4,51	3,63	8,14
Dec. 2	80,81	2,46	2,24	4,70							
„ 9	112,52	2,42	2,22	4,64							
„ 16	81,12	2,41	2,19	4,60							
„ 23	105,79	2,42	2,19	4,61	Dec. 23	2,33	4,28	6,61	4,27	3,55	7,82
„ 30	65,50	2,37	2,17	4,54							

* The Wednesdays *preceding* the Saturdays.

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1	2	3	4	5	6	7	8	9
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„ 18	25·37½	20·65	4·82½	20⅝	20 15/16	—	„	54
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JOURNAL OF THE STATISTICAL SOCIETY,

JUNE, 1877.

The Mortality *of* Hospitals, General *and* Special, *in the* United Kingdom, *in* Times Past *and* Present.*

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In selecting the subject of the mortality of hospitals during past and present times, for the Howard Prize Essay of 1876, the Council of the Statistical Society were probably influenced by the fact of erroneous conclusions having been too often drawn from comparisons made betwixt the results of medical treatment in various hospitals at different periods of their history, and which in the majority of instances may be traced to inaccurate and insufficient data employed as a basis of comparison. From the small amount of information we are able to gather with respect to the practice of our forefathers, it is clear that during the past and greater part of the present century, variations in hospital mortality, or, indeed, pathological statistics of any kind relating to hospitals, were not looked upon in the light we should be disposed to regard them. At the same time, it must not be overlooked that in reasoning from the death-rate alone, we are far from solving the problem involving the health of hospitals and the efficacy of medical treatment. Estimates drawn from mere mortality returns cannot be otherwise than misleading, unless they are accompanied with the

* Dr. Steele has been good enough to supply for the *Journal* the following abstract of his essay, to which the Howard Prize Medal for 1876 was awarded.

numerous collateral data bearing on their origin and descriptive of the administrative and other peculiarities of the establishment from which they have been separately obtained. Bearing these things in mind, it will be my object in the following pages to attempt an investigation of the causes which from time to time have modified the death-rate in different hospitals in the past, and which will probably continue to influence their relative mortality in the future. In pursuing this inquiry, it is primarily necessary that I should deal only with facts and figures obtained from sources of undoubted veracity, and discard all such as have had their origin in the records of ill-methodised experience, notwithstanding their popular acceptance.

As the task is associated with the early history and growth of asylums for the sick throughout the country, not less as health resorts than as schools of medical instruction, it is desirable that it should be prefaced by a short sketch of the origin and development of these institutions. From the scanty information we possess of such, and their non-existence, with two notable exceptions, at the commencement of the eighteenth century, it has been customary to consider that this country was a great way behind its neighbours in providing for the sick and afflicted; but there is every reason to believe that long prior to the suppression of the monasteries, our ancestors were not unmindful of the paramount claims of the sick and needy. We learn from works like the "Monasticon Anglicanum" and "Monasticon Hibernicum," as well as from numerous historical records,* that there were hospitals for the sick, lying-in hospitals, asylums for the aged, the impotent and the insane, and that the charities of the middle ages were neither few nor small. These establishments, which in the works referred to are calculated by hundreds, were for the most part separate foundations, the gifts of pious persons, and usually, though not always, in close relation to religious establishments, and under the exclusive jurisdiction of the monks. They were generally constituted in the departments of the monasteries set aside for the sick brethren, and were placed under the charge of an officer, or "infirmarius," who was supposed to possess a better knowledge of the healing art than the rest of his order. Even prior to the introduction of Christianity, we have a faint glimmer of the existence of a primeval hospital in the "Broin Bearg, " or, Home of Sorrow," in the legendary lore of Ireland, where the sick and wounded were provided with an asylum near to the royal residence, and there can be little doubt that refuges of a corresponding character have existed in all ages. The most authentic informa-

* See especially "Historical Collections of a Citizen of London in the Fifteenth " Century," printed for the Camden Society.

tion we possess of a hospital in England dates as far back in the Saxon chronicle as the year 1080, and relates how Lanfranc, the celebrated Bishop of Canterbury, founded during his lifetime two hospitals in Canterbury, one for various descriptions of disease and another for leprosy, a disease which was the curse of the population of every European country during the middle ages. So numerous were the asylums devoted to lepers, that one is inclined to believe that they were frequently confounded with the lazar houses intended for the most needy of the population, and though the suppression of the monasteries in this country also put a stop to the infirmaries connected with them, the leper houses continued their operations till the disease itself gradually disappeared from the kingdom. We have records of leprosy and of asylums for its reception in Scotland to the year 1693, and facts of its existence in Shetland in the years 1736 and 1740, after it had been banished from the mainland. There were two if not three leper establishments affiliated with St. Bartholomew's Hospital so late as the seventeenth century, one in Kingsland, known by the name of the Kingsland Spital, and another in Kent Street, Southwark, both houses having been converted from their original uses to the reception of venereal, or as they were then called fluxing cases. With the exception of the two hospitals of St. Bartholomew and St. Thomas, surrendered to the citizens of London in the years 1547 and 1558 respectively, there were no recognised separate foundations for the relief of the sick poor in this country from the period of the Reformation till the commencement of the last century. Very little information relating to the vital statistics of the two hospitals named is afforded us of their early career as asylums for the "sick and lame."* It is probable that for the first century after their surrender, they were employed for much the same purposes as they had been for centuries before, namely as species of almshouses "for the sick, poor, aged, "and impotent," and it was only after some stringent regulations were introduced concerning the admission of patients in the course of the seventeenth century, and when the profession of medicine was becoming a power in the State, that the two hospitals began to fulfil the conditions of curative establishments in the modern sense of the word. The history of Bartholomew's has the good fortune to be associated with the name of Harvey, the discoverer of the circulation, and from some minutes of the governing body of the time, communicated by Sir James Paget, we may form some idea, though necessarily an imperfect one, of the usages of the hospital

* The annual returns formerly submitted at Easter to the custodians of the royal hospitals, purporting to give the numbers cured and dead, are vague and untrustworthy.

at the commencement of the seventeenth century.* Harvey was appointed physician in the year 1609, and continued in that capacity for thirty-four years. From a series of recommendations he submitted to the governors in 1633, and which were subsequently approved of, it would appear that the medical staff had to contend with difficulties not unknown in our own day, and which refer to the admission of large numbers of persons suffering from hopeless disease as well as to an equally disproportionate number who were received for trivial ailments. This problem had to be solved in a similar manner to that adopted in every general hospital of modern growth, namely by a limited number only of incurable cases being admitted, and by slighter maladies not being admitted at all. Other recommendations of Harvey bearing on the duties of his surgical colleagues are mainly suggestive of the inferior position which the surgical department held at the time, when contrasted with the more dignified nature of the duties of the physician, and yet there are numerous reasons for believing that about the same period, surgery was becoming to be recognised as a progressive art of little less importance than its sister branch. The names of Vicary, Clowes, and Woodall, are handed down to us as zealous and intelligent surgeons in connection with Bartholomew's at this early date, and although their published works assist but little in the present inquiry, we have a description from Woodall of his success after amputations. In his treatise on gangrene and sphacelus, Woodall states that during the twenty-four years he had been surgeon to the hospital (he was appointed about the year 1612), he had amputated more than a hundred limbs, exclusive of fingers and toes, and that four-fifths of the patients went out alive. This result he ascribes to the superiority of his mode of operation, which may possibly have been in advance of that of his colleagues, but which has found but small favour with his successors. For all practical purposes of relief to the sick poor, St. Thomas's must have undergone a similar experience to the older foundation. Prior to the introduction of any legal provision for the poor, both hospitals were to some extent used to repress mendicity, as well as asylums for "blind, maimed, sick and helpless objects;" for we are informed, that after patients recovered, they were employed at work in Bridewell till they could prove their capacity to earn an honest livelihood. The authority of the governing bodies went even further than this. From the records of St. Thomas's Hospital it would appear that they possessed the power of inflicting corporal punishment, and that a whipping post and stocks were erected in the hospital, where patients guilty of irregularities were occasionally punished. At the same time a remedy for idleness was

* Memorials of Harvey.

found for such patients as were not confined to bed by employing them to grind the corn used in the establishment, in dressing flax and in numerous other light occupations to which none that were able could with reason object.* At the beginning of the eighteenth century the penal discipline was gradually being abandoned, and a stronger sympathy for the sick poor was becoming manifest in every part of the country, a sympathy which found expression in the people's desire to relieve at their own cost the necessities of their suffering brethren by instituting hospitals for their maintenance and cure. Nearly every town of any importance considered it a duty to follow in the wake of its neighbour, and probably at no period in the history of civilisation in this or in any other country, has there been witnessed such an outcome of public benevolence as was exhibited in the United Kingdom in the course of the century. The following table gives the dates of origin of most of these foundations. It will be observed that the cathedral towns lead the van in this beneficent work :—†

London.	Date of Foundation.	Provincial.	Date of Foundation.	Irish.	Date of Foundation.
Westminster	1719	Cambridge	1719	Jervis Street	1726
		Salisbury	'16		
Guy's	'23	Bristol	'35	Steevens	'33
		York	'10		
St. George's	'33	Edinburgh	'36	Mercers	'34
		Windsor	'36		
The London	'40	Aberdeen	'39	The Meath	'56
		Northampton	'43		
Middlesex	'45	Exeter	'45	House of Industry	'74
		Manchester	'53		
		Chester	'55		
Special Hospitals—		Newcastle	'51		
The British Lying-in	1749	Glasgow	'94	*Special in Dublin—*	
		Norwich	'71	The Rotunda Lying-in	1745
		Stafford	'69		
City of London Lying-in	'50	Worcester	'45		
		Leeds	'67	The Lock	'54
		Oxford	'70		
Queen Charlotte's Lying-in	'52	Leicester	'71	The Westmorland Lock	'55
		Dumfries	'75		
		Hereford	'76		
		Birmingham	'78		
Small pox	'46	Montrose	'80	Cork	1720–2
		Nottingham	'82		
Lock, female	'45	Canterbury	'93	Limerick	1759
		Dundee	'95		
,, male	'47	Stafford	'97	Belfast	'97

* Golding's History of St. Thomas's Hospital.

† Mainly compiled from "Walker's Statistics of Hospitals," and "Wilde's "Report on the Status of Disease in Ireland; Census of Ireland, 1851."

In the course of the present century the greater number of these establishments have been enlarged or rebuilt, and an enormous accession has been made to the list, in harmony with the wealth and growth of the population. In the sixth report of the medical officer of the Privy Council, the reporters refer to ninety-nine curative institutions, which they had visited in 1863, but the total number up to the present time cannot fall short of two hundred, if it does not materially exceed it. In London alone, the number of curative charities, independent of dispensaries, convalescent homes, and incurable hospitals, amounted last year to eighty-four, and comprised eighteen general hospitals, ten consumptive, five ophthalmic, three orthopœdic, four skin, seventeen hospitals for women and children, five lying-in hospitals, and twenty-two for special and miscellaneous purposes. It may be interesting to know that in the aggregate the medical charities of the metropolis absorb less than half-a-million of the six or seven millions that are spent annually for the many miscellaneous objects of public benevolence in London alone.*

With these preliminary remarks, I will now refer to the subject of the death-rate, and the causes affecting it in times past and present. It will probably assist these inquiries if I submit at the outset the following returns, which give the mean of the numbers treated annually in the more important London hospitals, along with the death-rate in each institution for a specified term of years, 1872 to 1875. The figures are obtained from the returns made to the council of the Hospital Sunday Fund, with the exception of the deaths, which were supplied separately by the secretaries of the different hospitals:—

London Hospitals, General and Special.

	Date of Foundation.	Available Beds.	Average Number Treated each Year.	Days in Hospital.	Average Annual Mortality.
					Per cnt.
Bartholomew's	1547	650	5,548	33	9·3
St. Thomas's	'58	573	3,167	36·3	11·73
Guy's	1723	650	5,725	38·7	10·26
Westminster	'19	190	1,874	25·5	8·59
St. George's	'33	353	3,263	25	8·82
The London	'40	602	5,566	33·7	11·34
„ Middlesex	'45	300	2,293	31·7	12·32
Charing Cross	1818	150	1,387	32·6	10·93
Royal Free	'28	104	1,337	26	7·20
University College	'33	154	1,756	27·5	11·46
King's College	'39	172	1,768	28	12·72
St. Mary's	'51	157	1,800	29	10·92
German	'45	100	1,220	23·5	7·24
Seamen's	'21	250	2,161	29	4·68

* "The Classified Directory to the Metropolitan Charities, 1877."

London Hospitals, General and Special—Contd.

	Date of Foundation.	Available Beds.	Average Number Treated each Year.	Days in Hospital.	Average Annual Mortality.
Special Hospitals—					Per cnt.
Male Lock	1747	20	143	30	0·46
Female ,,	'45	185	579	56	0·97
British Lying-in	'49	24	171	21	1·11
City of London Lying-in	'50	45	425	20	0·86
Queen Charlotte's ,,	'52	41	443	20	2·85
General Lying-in	'65	30	301	19	0·70
Hospital for Consumption	1842	246	1,027	75·5	9·9
Hospital for Chest Complaints	'48	120	762	39	9·49
Cancer	'51	66	316	32	13·60
Fever	'02	200	245	30·7	11·89
Royal Ophthalmic	'04	70	1,250	17	0·05
Sick Children's	'52	117	884	47	5·46
Homœopathic	'49	70	1,338	46	1·28

The great disparity observed in the mortality of the above establishments would be quite incomprehensible were we ignorant of the laws which govern the admission and discharge of patients in each, and especially of the particular forms of disease which are thought most worthy of selection. The fact that a consumptive hospital, like that at Brompton, intended for the treatment of a disease usually adjudged incurable, should indicate a death-rate considerably less than that which obtains at the chief general hospitals, might appear a fallacy, but it is not difficult of explanation when regard is had to the rules in force at the institution. The same remark applies, though with less force, to the relative differences in the death-rates of the hospitals intended for general diseases, which range from a little over 4 per cent. at the Seamen's Hospital to above 12 per cent. at King's College. I have placed the Homœopathic Hospital among such as are intended for special objects, though it is ostensibly employed for medical and surgical purposes of all kinds, but its excessive small death-rate would rather indicate its being used as a species of health resort for a robust fraction of the community, than as an asylum for the diseases ordinarily met with in London. It has been repeatedly shown by series of statistical data, by annual hospital reports, and is, in fact, now universally admitted as a hospital constant, that the mortality of medical cases, or such as affect the organic functions and fall under the care of the physician, is greatly in excess of that larger class which comes within the more immediate province of the surgeon. In addition to this it is also proved that in both departments, disease in hospitals is more fatal among males than among females. Whether the same causes operated in the early history of

our hospitals to produce like results is not so certain, but judging backward from analogy, there is every reason to suppose they did. The characteristic terms, medical, surgical, and special, however much they may facilitate our present knowledge of hospital mortality, throw little light on the past, as it was the practice in the old hospitals to mix the patients of the various classes in the same wards, a custom which obtains to the present time in many small provincial hospitals. Another conflicting element may be traced to the practice of considering numerous diseases as the common property of physician and surgeon alike, while in most hospitals the line of demarcation between the two departments is very different in its limitations. But apart from these distinctions, and taking note only of the general mass of patients admitted during the seventeenth and early part of the eighteenth century, especially into the two royal hospitals, Bartholomew's and St. Thomas's, the mortality, judging from the few records we possess, must have been exceedingly high. We learn from a passage in Petty's "Political Arithmetic," that the deaths in the two hospitals in the year 1685 amounted to 12·5 per cent. of the admissions, and that the death-rate at St. Thomas's in the year 1689 amounted to 10 per cent. of the same. The printed report for 1688, submitted to the civic authorities, and now in possession of St. Thomas's Hospital, gives the mortality of that year at 15·3 per cent. for Bartholomew's, and 12·2 for St. Thomas's, so that there is every reason to believe that the death-rate in the city hospital was considerably above that situated in Southwark, during the latter part of this century at least. The numbers admitted respectively to the two institutions during the year mentioned were 1,690 for Bartholomew's and 1,654 for St. Thomas's. It may be assumed that in these, as well as in other hospitals which were founded in London and other large towns in the early part of the following century, the governing bodies were actuated by similar motives in providing for the sick, and that the deaths in the separate asylums would be influenced by causes, such as local circumstances of population and recurrent epidemics, which would operate very much alike in all cases, yet we find at times remarkable differences in the death-rate of separate hospitals. From a report of St. Bartholomew's for the year 1704, it would appear that the deaths had fallen very considerably from their previous high rate, for out of 2,429 patients admitted in that year, only 165 died, and it is curious to note that towards the end of the same century, from 1783 to 1790, when the statistical data in the table referring to this hospital commence, the mortality exhibits an equally small proportion. We are able to submit a more sustained and earlier record of the only other hospitals established on a corresponding scale to Bartholomew's, namely

Guy's and St. Thomas's, from which it might be inferred that the death-rate in these establishments was considerably higher than in the former institution, but in the absence of a continuous table of results, it is unfair to draw any comparison at this period. The differences in results betwixt St. Thomas's and Guy's from the period when reliance may be placed on the returns are remarkable, and require some explanation. I will take the first complete series of years which I have been able to obtain of the practice of the two hospitals, namely, the seven years 1734-40 :—

Years.	St. Thomas's Hospital.			Guy's Hospital.		
	Total Cases.	Deaths.	Mortality per Cent.	Total Cases.	Deaths.	Mortality per Cent.
1734	2,647	307	11·6	1,781	257	14·4
'35	3,025	355	11·7	1,889	258	13·6
'36	2,656	316	11·8	2,007	264	13·1
'37	2,860	321	11·2	1,760	258	14·6
'38	3,027	318	10·5	1,798	250	13·9
'39	2,747	261	9·5	1,745	277	15·8
'40	2,593	296	11·4	1,895	308	16·2

The mean rate of St. Thomas's being 11·1, while at Guy's the corresponding mortality over the period amounted to 14·5. Guy's continued to maintain its high rate till the middle of the century when it began to improve, and continued a diminishing mortality through successive decades till the end of the century, when it stood at 10·2 per cent. St. Thomas's showed signs of improvement at an earlier date, namely from 1740, after which it gradually diminished through successive decades, till it reached a minimum in the ten years 1770-80, of 6·7, and then rose again gradually till the end of the century, when it reached the figure of 7·9 for the ten years 1790-1800, being exactly the same rate as that given for Bartholomew's Hospital for the corresponding period. The high mortality at Guy's during the earlier period, and in fact throughout the century, may have arisen from the fact of the hospital being still looked upon as an asylum for incurables, although as early as 1730 the governors, in a document intended for the public, repudiated the obligation of receiving such cases, and gave reasons for maintaining the hospital for general purposes. Still some concession must have been made to the principle, from the larger number of wards which were devoted to medical than to surgical cases, and from the greater facilities of admission allowed to the patients. The causes of death at Guy's have been carefully recorded during the past century, and we gather, from a total of 1,970 deaths embraced in the septennial period, 1733-40, the proportional mortality of the more important diseases :—

	Number.	Per Cent. Proportion to Gross Mortality.	Deaths in each 1,000 Admissions.
Deaths from—			
Fever	298	15·12	21
Small pox	54	2·74	4
Consumption	557	28·27	40
Dropsy	329	16·70	24
Injuries	32	1·60	2
Mortification	68	3·41	5
Venereal	82	4·16	6
Other diseases	550	27·91	39

If the returns are examined from year to year in the table relating to them in the appendix, it will be noticed that consumption was then, as it still continues to be, the main factor of the hospital death-rate, and although causes of a more acute and variable character, such as intercurrent epidemics of fever and small pox, occasionally disturbed the mean annual rate, they had barely an appreciable influence on it when the returns are extended over a period of more than five years. We have seen how the mortality in the three hospitals referred to diminished materially in the last half of the century. The charities were situated in the heart of a redundant population, and must have received a very large number of the worst cases of disease, but a corresponding complement of fatal affections also found their way into St. George's and the London Hospitals, which at that time may have been said to have been placed in the country. A report of the latter, purporting to give an account of it in 1766, describes it as situated in an airy situation in the Mile End Road, near the Mount, an eminence now levelled and known by a less respectful designation in the previous century, when the famous highway was sprinkled with the mansions of the nobility and rich city merchants. The London Hospital contained at that time 190 beds, and had accommodated during the year mentioned 1,685 patients, of which 158 died, making a death-rate of 9·3 per cent. In a manuscript record preserved at St. George's Hospital, the mortality of that institution in the first years after its opening, namely 1735-36, was as high as at Guy's at the same period, marking 16·4 per cent. of the cases admitted, but it soon diminished to a more favourable standard, and at the time when the record ceases, in the year 1766, it had reached a proportion of 12·1 per cent. It is curious to observe that when entries of the annual deaths were recommenced again at this hospital, after more than half a century's suspension, the death-rate had undergone little apparent change, as we learn from the record comprising the period 1822-30, which gives a death-rate of 12·8 per cent. Since

1830, contrary to what has been observed in the large general hospitals, the mean annual mortality at St. George's has sensibly and progressively diminished, until it has reached the comparatively low figure of 8·8 per cent., at which it has stood during the last three years. From the scattered information obtainable from other sources, there can be no doubt, as far as London was concerned, that there was a material diminution in the hospital mortality in the latter half of the eighteenth century in comparison with the first half, and in that of the century preceding it. The following table, condensed from two in the appendix, proves that such was the case in two of the most important establishments in which statistics of mortality have been preserved, and though deaths in hospitals are not now viewed as indicative of the extent of disease among the population at large, the facts agree with the great decrease in the bills of mortality which occurred at the periods referred to:—

	Guy's Hospital. Death-Rate per Cent.	St. Thomas's Hospital. Death-Rate per Cent.
From—		
1730–40	13·8	11·1
'41–50	14·8	9·8
'51–60	12·6	8·7
'61–70	11·1	8·8
'71–80	10·2	6·7
'81–90	10·4	7·1
'91–1800	10·2	7·9

With regard to the sanitary arrangements considered necessary for the hospital sick throughout the kingdom during the past century, we are almost entirely indebted for information to Howard, who made his celebrated pilgrimage through the hospitals towards the close of the century, and whose impressions and suggestions are to be found in his "Notes on Lazarettos." From an analysis of these it does not appear that the construction of the buildings was so much at fault as the disposition to overcrowd them with patients, but they were wanting in those numerous domestic requirements which, since Howard's time, have been looked on as essential. Buildings constructed in the seventeenth and early part of the eighteenth century were frequently without means of drainage and suitable water supply, nor were facilities provided in the majority of them for fulfilling the ordinary requirements of nature, till nearly the end of the century. Howard, writing in 1788, continually refers to the absence of water closets, as well as to the want of facilities for the ordinary purposes of ablution, and it is very probable that in these respects hospitals fared no worse than

the majority of private houses of the better class. It is satisfactory to see that at this time the governing bodies in most English hospitals were busily employed in introducing numerous improvements, although in transforming the practice of the establishments they had serious difficulties to contend with. The buildings, however well adapted they might have been for the treatment of the sick, and in this respect many were superior to those of a later date, were ill contrived for additions being made to them in the shape of necessary sanitary appliances. As a rule sinks and water closets, and frequently baths, were placed inside the four walls of the wards, with only a slight partition intervening between them and the sick, in which position they were afterwards found to be a source of unmitigated evil, and have now been removed wherever practicable, to additions or projections made to the buildings so as to cut off direct communication with the ward atmosphere. The ward construction in some of the oldest hospitals, as at Guy's, the old St. Thomas's, and the Royal Infirmary at Edinburgh, consisted in the arrangement so much in vogue at the present day, of having two rows of beds placed within the long axis of the building, with windows on both sides, each ward providing accommodation for from ten to thirty patients. For some cause, probably for convenience of administration, and the necessity for extending accommodation on limited sites, this simple plan was afterwards departed from, and corridors, partitions, and supplementary additions, abutting on the original buildings, have been introduced, all tending materially to interfere with the natural currents of air.

Again, late in the past and during the first half of the present century, many new foundations were originated in which, apparently, no regard was had to sanitary requirements, so far as the internal construction of the hospital was concerned. In some rare instances four rows of beds were accommodated within the foundation walls, a central or spinal wall being placed in the long axis of the ward so as to divide it into two separate compartments, and thereby precluding cross ventilation. But a more objectional plan than any noticed, was that in which the wards were lighted by windows at one extremity only, access being had either from the side or from the opposite extremity by doors communicating with a staircase or corridor, a principle of construction which may yet be seen in numerous hospitals throughout the country. In all cases commented on by Howard, ventilation was conducted by means of windows, doors, and fire places, and to prevent downward currents from open windows, it was not uncommon to have the framework of the upper sash fitted with a movable board sloping at an angle towards the ceiling, a plan which commended itself by its sim-

plicity, and which is still in frequent use. In one or two rare instances the sashes were hung on pivots in one or more divisions, so that they might open outwards and inwards, and when open to the fullest extent "they represented planes at right angles with "the sash frames, admitting air equal to the whole opening of the "windows excepting the materials of the frames." The ward furniture was in every case of the most meagre description, being usually confined to the wooden bedstead with tester and curtains and the wooden box, which usually served the double purpose of a clothes cupboard and seat. In Howard's time the wooden bedsteads were in many hospitals being replaced by iron ones, while the curtains were retained till far on in the present century, and are not yet entirely discarded.

The regulations relating to hospital dietaries would not commend themselves to our favour at the present day as applicable for sick people, though they may have been in advance of the ordinary requirements by which the food of the populations was regulated. The comparatively low price of butcher's meat and the frequently high cost of bread, account for the larger ration of the former and the smaller issue of the latter when contrasted with modern usage. From Howard's notes we learn that the full diet allowance at Bartholomew's and the London Hospital consisted of 8 ozs. of dressed meat and 12 ozs. of bread, while for middle diet 4 ozs. of meat and 8 ozs. of bread were allowed; to this was added in each case a pint of broth, which was simply the liquor in which the meat was boiled, and an equivalent amount of milk pottage or water gruel for breakfast or supper, while milk, butter, and cheese were allowed for special diets. An old table of the diets at St. Thomas's Hospital in use long before Howard's time, gives the following allowances for the most generous diet of the period for each day of the week. It may be premised that the convalescent patients had three meals daily—breakfast, dinner, and supper; that the breakfast consisted of a diurnal allowance of a pint of water gruel, and the supper of a pint of broth, while each person was entitled besides to a daily ration of 12 ozs. of bread and 2 pints of beer:—

Sunday	Half-a-pound of meat when dressed.
Monday	,, ,,
Tuesday.....	4 ozs. of butter or 6 ozs. of cheese.
Wednesday	Half-a-pound of mutton when boiled.
Thursday	4 ozs. of butter or 6 ozs. of cheese.
Friday	Half-a-pound of mutton when boiled.
Saturday	4 ozs. of butter or 6 ozs. of cheese.

Tea as a meal did not come into general use till the present

century was considerably advanced, its place having been supplied with gruel and pottage occasionally mixed with milk, and in the Scotch and Irish hospitals with oatmeal porridge. The allowance of beer was remarkable, and from the quantity dealt out to each person (from two to three pints, and in some cases as much as two quarts) it may be charitably assumed that it was less potent than the beverage of modern times; yet the brewery was considered as necessary an adjunct of the hospital as the kitchen or laboratory, and great abuses became associated with it. Next to a patient's summary dismissal, no punishment appears to have been thought so severe as that which deprived the delinquent of this coveted ration, and the old regulations refer frequently to this provision of their penal code. The absence of all vegetables in the dietaries, though their exclusion in the ordinary food of the poor was habitual, may have given rise to occasional instances of scurvy occurring in the midst of hospital practice, but we have no positive information on the subject.

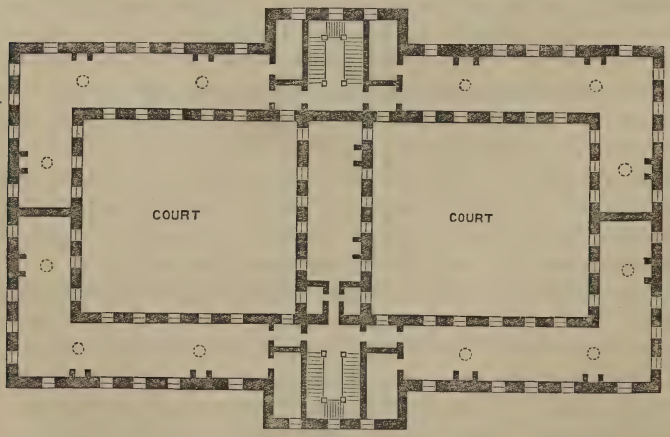
A more likely cause of disease, engendered by maladministration, might be sought for in the neglect of cleanliness, in the filthy habits of the patients and in the absence of all facilities for personal ablution. The frequent references in Howard's notes to the wooden bedsteads, to the occurrence of itch and vermin in the wards, and to annual payments for the periodical destruction of bugs, all indicate a condition which we cannot dissociate from frequent forms of skin disease, or from the spread of such distempers as have their origin in dirt, or find in it a fertile matrix for their development. When we add to this the fact, that diseases of an infectious character, and of a dissimilar origin, were uniformly mixed with others of a non-contagious character, we cannot be wrong in assuming that many must have been annually sacrificed to these unwholesome conditions. Though there is abundant proof in the early records of the older hospitals, that fever and small pox were seldom absent from the wards, it took a very long time to convince the governing bodies of the propriety of isolating these diseases in separate hospitals, or even in separate wards of the same hospital. Apart from the lying-in and lock hospitals, which had a recognised origin apart from and as old as the general hospitals, there does not appear to have been any foundation for diseases of an infectious character prior to the establishment of the London Small Pox Hospital in 1746, and as this asylum was instituted as much for inoculation purposes as for small pox, its influence in diminishing mortality in the general hospitals was barely appreciable during at least the first half century of its existence. The foundation of the London Fever Hospital dates only from 1802, and, judging from our modern knowledge of fevers, there is

every reason to believe that the two most fatal forms of the malady —typhus and enteric—each originating from well defined causes, were never absent from the metropolis prior to this period, yet from the comparatively small number of patients treated in the hospital (averaging only about fifty annually during the first ten years, with a mortality of 16 per cent.), it is not likely that the new institution modified materially the death-rate of the general hospitals. The fatal effects of epidemics were far more felt in large towns out of London, where they taxed to the utmost the limited accommodation of the local hospital, and necessitated the erection of additional buildings for the reception of fever and small pox. In Liverpool and in other large towns in England, hospitals, called by the singular name of houses of recovery, were periodically extemporised for the purpose, and at Edinburgh, Glasgow, Dublin, and Belfast, temporary and in some cases permanent additions were made to the original foundations, until the limited spaces available for airing grounds were well nigh absorbed in attempts to grapple with these visitations. There is no doubt that in these endeavours, sanitary laws were very often lost sight of in the desire to find a temporary refuge for the sick. We have fortunately no records of excessive crowding in English hospitals which can at all compare with the experience of the Hôtel Dieu at Paris, where, in the year 1773, we are told that 5,000 sick were brought together in a building possessing but 1,200 beds (from the law requiring the officials to admit every applicant); but we have ample evidence to show that great dangers arose at home from overcrowding and neglect of cleanliness and ventilation. Sir John Pringle, in his work on the diseases of armies, comments on these evils as causing increased mortality in military hospitals; and Sir Gilbert Blane relates his experience at St. Thomas's Hospital in 1782, when an outbreak of fever carried off many patients, besides officials and servants, from a neglect of sanitary precautions,* and the history of nearly every hospital is interspersed with similar revelations. It is not however easy in the absence of strictly accurate data, to arrive at any definite conclusions with respect to the influence of sanitation or improved methods of medical treatment on hospital mortality. Each advocate of some reigning doctrine takes an optimist view of its virtues, attributing to it powers which were merely the effect of natural laws, and while one attributes the small mortality noticed at the beginning of the present century, to the general adoption of the antiphlogistic regimen with its accompaniments of bleeding, purging, and low diet, another ascribes his hospital success to a stimulating and nourishing regimen, while a third expatiates on the miraculous virtues of cold water in diminishing the fatality of

* "Medico-Chirurgical Transactions," vol. iv.

fevers and acute diseases generally. Even Dr. Blane's estimate of the improvement in the health of St. Thomas's Hospital after some alterations had been effected must be received with a certain reserve, as during virulent epidemics it is not uncommon to find domestics in the best arranged hospitals attacked with the prevailing distemper, while if the quotation referred to be compared with the results a few years afterwards in the mortality table of the same hospital, the death-rate will show that it still had a tendency to increase, notwithstaning the precautions adopted. Rather than attempt to draw inferences from miscellaneous sources, I will content myself by submitting in a series of tables the consecutive death histories of a few of the more important institutions of the country, with special reference to those with which I have been personally connected, and without losing sight of the occasional experience of other establishments.

The first hospital to which I would refer is that founded by Thomas Guy, in Southwark, in the year 1723, and which also happens to be the oldest erection of its kind in the kingdom which has been continuously occupied by patients. As primarily constructed under the supervision of the founder, the hospital consisted of two quadrangles connected by a common centre, with an open colonnade on the ground floor, at each end of which were placed staircases communicating with the male and female divisions respectively. The ground floor of the double building on a level with the colonnade was also open, and was intended to serve, as it did for many years, as a promenade ground, being protected from the weather by the exterior main walls of the hospital, so



that the accommodation for wards commenced on the first floor, which was 14 feet above the ground level. There were three

floors, the first and second containing each four wards, shaped somewhat in the form of the letter L, and the third or attic floor contained two only, each of these however occupying the three sides of the separate quadrangles. The dimensions of the ordinary wards were 22 feet wide by 134 feet in length, those on the first floor being 11 feet, and those on the second 10 feet in height. The central portion common to both squares was also used for patients, and consisted of a first floor oblong room 60 feet by 22 feet, which for many years was used as a chapel, with a ward of the same dimensions on the floor above, as depicted in the drawing. The entire hospital consequently consisted of eleven wards, eight of which were of nearly similar dimensions, one of minor size, and two twice the length of the ordinary wards, placed immediately under the sloping roof, and very inferior to the others in point of width, height, and internal arrangement. All the wards were liberally furnished with windows on both sides, which were hung without the usual appliance of sash frames, but were made to open readily at any angle by means of levers attached to each. The wards were also supplied with fireplaces in the proportion of three to each ordinary ward, being at the rate of one fireplace to every twelve patients. The water supply was obtained from the Thames at London Bridge, being pumped by horse-power to large leaden cisterns, still to be seen in the basement, and from thence it was carried in buckets to the separate wards. With the exception of a few rooms placed to the right and left on entrance, and the basement, now partly used as a coal cellar, very little provision was made for administration, nor were the wards furnished with sanitary appliances of any kind. The building was substantially built of brick, without the slightest attempt at adornment, but as may be gathered from the description there were numerous features in the construction, indicative of a thoughtful care and foresight on the part of the founder and his advisers with regard to its future uses, matters which have too often been lost sight of in planning buildings of a much later date. The entire cost of the erection did not exceed 14,000*l.*, a very small sum for such an extensive foundation, even at this early period, and as it was intended to accommodate 400 patients, the cost of each bed may have been calculated at the incredibly small sum of 35*l.* But at no period during the century was the original design of accommodating the proposed number of patients carried out. Had it been otherwise, the individual space, curtailed as it was with wooden bedsteads and heavy appendages in the shape of testers and curtains, would have barely amounted to 800 cubic feet, but we learn from the consecutive series of returns in the appendix, that although there was a gradual increase in the number of

admissions through successive decades, there could have been little attempt at overcrowding until nearly the end of the century, when it was deemed advisable to utilise the open airing space on the ground level betwixt the main walls of the building for ward purposes. At the same time, in order to meet the requirements of the time, numerous windows formerly made to open were built up, making more head room for beds, while additional wings for administrative and other purposes were joined on to the original structure, obstructing both light and air, and materially interfering with the simplicity of the primitive design. No really permanent addition was made for the accommodation of an increased number of patients till the year 1831, when in consequence of a new bequest requiring the trustees of the charity to find room for an additional hundred patients to the four hundred provided for by the original testator, means were taken to utilise a number of old houses in the immediate vicinity until such time as a new hospital could be built. One half of the new hospital, on which much care and money were expended, was opened in 1854, and the remaining wing was completed in the year 1871, at which periods it may be noticed there were considerable accessions to the usual number of patients, the available beds at the disposal of the governors on the occasion of the last addition, being not less than 650. It is necessary to mention these details, as they are not only significant of the progress of other hospitals, but tend also to throw light on the question of fluctuating mortality as it has presented itself from time to time at Guy's. The deaths at the hospital, as was noticed in a previous table, showed a high rate till the middle of the last century, after which time, notwithstanding a growing addition to the relative number of patients, they exhibited a tendency to diminish, and during the closing decade, 1790-1800, the percentage mortality amounted to 10·2 on the total admissions. Howard visited the hospital in the year 1788, and observes in his notes that the governors were then making extensive alterations with the view of improving its sanitary condition. There were at that time 304 patients in the wards, and among other improvements then in hand, he refers to the substitution of iron bedsteads for the wooden ones, which had been in use for the previous seventy years, and to the introduction of waterclosets, "which were on the *best* construction and *not* in the "least offensive." Besides the windows already referred to, opening outwards and inwards by means of lever adjustments, Howard writes in commendable terms of a system of ventilation he noticed, by which the foul air from one ward was drawn out into the chimney of the ward above through circular openings of considerable width in the ceilings. This ingenious method of extraction, which anticipated that afterwards introduced by the

Erratum in Part II, Vol. XL.

At p. 195, 1st line, *for* Arnold, *read* Arnott.

late Dr. Arnold, appears to have been discontinued from some cause, probably from the inconveniences arising from returning smoke, which have proved so fatal to the employment of similar contrivances. While commenting on the whole rather favourably than otherwise on the hospital arrangements, Howard condemns the wooden bedsteads, the low height of the ceilings of the upper wards, and exposes numerous abuses which had crept into the domestic management, and which were common to the London hospitals of the time. By the end of the century most of the improvements mentioned were completed, and although there is no evidence to show that there was any diminution of the mortality in consequence, it is reasonable to infer that they must have been attended with much benefit to the sick. In the course of the first decade of the nineteenth century, the deaths after diminishing gradually from the year 1750, again showed some signs of increase, apparently from the admission of a large number of persons suffering from fatal chest complaints and from numerous accidents, the deaths from the latter cause having risen from 2 to 5 per cent. of the relative proportion from all causes. After 1810, the death-rate again diminished to a fraction below 10 per cent., where it remained till greatly increased accommodation was provided about the year 1854, when it fell to some extent, but afterwards rose gradually till it reached the high figure characteristic of the experience of the last few years. The accompanying abstract will best illustrate these changes :—

	Mortality per 100.		Mortality per 100.
From 1800 to 1810	11·6	From 1840 to 1850	9·7
„ '10 „ '20	9·9	„ '50 „ '60	9·1
„ '20 „ '30	9·9	„ '60 „ '70	9·7
„ '30 „ '40	9·8	„ '70 „ '76	10·6

It is interesting to note how the two main factors which had influenced the death-rate since the foundation of the hospital, fever and consumption, still continued at the beginning of the present century to tell on the gross mortality. Deaths from injury were also becoming more common, and as the century advanced they increased from 5 per cent. of the total deaths in the term referred to, till they reached 16 per cent. in the septennial period 1853-60, and 18 per cent. during the subsequent interval of twelve years to 1872, at which point they have continued to remain. The deaths from accidental causes are however partly neutralised by the almost total disappearance from the death register of small pox and syphilis. In the first half of the last century, judging from the interval from 1732 to 1745, deaths from small pox averaged eight a-year; towards the latter part of the century, from 1770 to 1780, they had fallen to

three a-year, and during the decennial period from 1800 to 1810, there appears to have been only one death recorded from this cause. That syphilis was a far more formidable disease in the hospitals of the past than it is at present, is evident from the prominent position it took in the bills of mortality, in the early establishment of lock hospitals, and in the extensive provision made for its treatment in the general hospitals. Notwithstanding this, the disease itself does not appear to have had any very appreciable influence on the hospital death-rate, which at all times has been mainly influenced by those organic diseases involving the vital organs, which have continued to the present day to decimate the hospital as well as the general population. Apart from consumption and its allies, there was, however, another cause at work, increasing periodically the death-rate of this as well as of every large hospital intended for general purposes. This was fever, which, in an endemic or epidemic form was never absent from large towns, and which contributed more largely to the ordinary death-rate than any other group of diseases, with the exception of those comprised under chest affections and dropsies, while in epidemic years it greatly outstripped them. Judged by the standard of the London Fever Hospital, where the admissions have been registered with but little intermission since 1805, the death-rate from the group of diseases comprised under the general term of fever, has fluctuated from 9 to $25\frac{1}{2}$ per cent. according to the type of the epidemic, and the experience of most large hospitals will confirm the truth of these remarkable extremes. From the annual death register of the more important causes of death at Guy's, it would appear that the years 1741-42 contributed a larger number of fatal cases of fever than any others in the series, although later on in the century the deaths from the same cause spread over any given number of years maintained even a higher relative proportion than they did in the first half. The year 1741 was a season when typhus fever, after having first devastated Ireland, spread with great virulence in London, and continued to prevail extensively till the close of the following year.* Again, nearing the end of the century, we have records of another fatal epidemic also imported from Ireland, leaving its mark on the mortality returns of the first decade of the present century, and which was probably one of the main causes that gave rise to the establishment of the London Fever Hospital. As new hospitals came to be founded, and better provision made for the poor in the workhouse infirmaries, the annual complement of fever cases in the London hospitals diminished, while from the growth of the population in other large towns, which,

* "Dr. Murchison on Fevers."

as a rule, were limited to but one hospital, the fever cases, especially in such as were liable to recurrent epidemics, greatly increased. This accounts partly for the increase of mortality during the present century in such hospitals as those situated in Manchester, Edinburgh, and Glasgow, and other towns where fever was treated either in the general wards or in separate wards of the respective hospitals. I give in illustration of this fact, the returns, during two intervals of ten years, at the commencement and latter half of the present century, of the Edinburgh and Glasgow hospitals, institutions conducted on much the same principles and subject to very similar influences. The first part of the table comprises the decade 1808-17, a period remarkably free from epidemics of fever, and is taken from Dr. Bisset Hawkin's "Medical Statistics" and "Buchanan's History of the Glasgow Hospital," while the second includes the term 1866-75, and is extracted from the official reports:—

Year.	Edinburgh Royal Infirmary.			Glasgow Royal Infirmary.		
	Admissions.	Deaths.	Mortality per Cent.	Admissions.	Deaths.	Mortality per Cent.
1808	1,787	121	6·7	840	59	7·0
'09	1,646	109	6·6	886	43	4·8
'10	1,854	108	5·8	936	52	5·5
'11	2,146	121	5·6	826	45	5·4
'12	2,018	88	4·3	877	47	5·4
'13	1,774	96	5·4	1,022	83	8·1
'14	1,884	108	5·7	1,135	102	8·9
'15	1,628	111	6·8	1,340	96	7·1
'16	1,798	123	6·8	1,511	124	8·2
'17	2,250	142	6·3	1,886	136	7·2
1866	4,971	590	12·0	5,619	661	11·7
'67	4,431	497	11·2	5,101	542	10·6
'68	4,330	494	11·4	5,314	517	9·7
'69	4,342	434	10·0	6,119	595	9·7
'70	4,385	478	10·8	6,262	556	8·9
'71	4,653	486	10·4	6,540	592	9·0
'72	4,410	499	11·3	5,452	641	11·7
'73	4,383	444	10·1	5,377	601	11·1
'74	4,695	427	9·1	5,269	605	11·4
'75	4,661	430	9·2	5,172	611	11·8

Note.—The mean death-rate during the first period was consequently 5·9 for the Edinburgh, and 6·9 for the Glasgow Hospital, while in the more recent decade, it has preserved an average of 10·5 per cent. in both institutions. But apart from fever, there were other agencies to account for a fluctuating death-rate.

It was stated in a previous page that this somewhat fitful mortality was to be explained partly by the relative proportions

which the medical bore to the surgical patients. Until the commencement of the present century it was not customary to make any special classification of diseases, as both classes were treated in common in the same wards, but from the records in my possession, I have been able to compile a table which gives the annual number of patients discharged and who died in the separate departments in Guy's Hospital from the year 1814 to the present time, from which the following conclusions are obtained :—During the first term from 1814 to 1820, the proportion of surgical cases was nearly twice that of medical, a disparity which would lead us to expect a smaller general death-rate than actually existed; but this again is explained by the very high mortality which obtained among the medical cases at the period, reaching as it did to 17·3 per cent., a proportion nearly as high as any average that it has attained since. From 1820 to 1830 the medical patients increased a little, but not to a very appreciable extent, while the death-rate on the surgical side became more marked from an increasing number of surgical injuries received into the wards. A corresponding fatality continued on the surgical side throughout the two subsequent decades, when it was checked by an extension of the ophthalmic department, which was instrumental in reducing it from an average of 6·5 to 5·3 per cent. in the course of the decennium terminating 1860. In the next interval of ten years it rose slightly in consequence of a diminished accommodation for syphilitic cases, and from 1870 till the present time it has maintained the high figure formerly quoted as the average death-rate prior to 1850. The high and increasing hospital mortality of recent years which has been felt in the chief metropolitan institutions, will no doubt be attributed to the graver character of the maladies received, but it is gradually assuming proportions which deserve the most serious consideration. It is proverbially remarked that the hospital which confers the largest amount of benefit on the community is that in which the death-rate is found to be the highest, but such an admission, if true, and if acted upon to the extent of admitting none but critical and incurable affections, would rob the hospital of half its value, and paralyse all efforts of medical skill in the shape of prevention. On the other hand, if the most pressing claims of the sick in an advanced stage of disease are disregarded, and preference is given to such as are recommended by supporters of the particular institution, who for the most part are strangers to the more urgent needs of the many, much injury may be inflicted on the sick poor, and on the objects which the hospital was purposed to fulfil. That a more generous spirit prevails among the hospital supporting community than was formerly the case, is I think evident, in London especially, from the graver character of the cases

admitted to the general hospitals, and which for the most part are left to the selection of the resident medical staff. The accompanying abstract from the mortality tables, will illustrate the growing death-rate of four of the chief hospitals from the middle of the present century :—

	Mortality per Cent.			
	Bartholomew's.	Guy's.	St. Thomas's.	The London.
1850 to 1860.....	8·5	9·1	7·5	7·9
'60 „ '70.....	10·7	9·7	10·8	10·3
'70 „ '76.....	9·9	10·6	12·15	11·6

Had there been any material alteration in the complement of beds allotted to medical in contradistinction to surgical purposes in the three hospitals first on the list, the increasing mortality might have been readily explained, but there is no reason to suppose that such has been the case. The London Hospital occupies a more exceptional position. For very many years it had the character, and to some extent still retains it, of being the greatest surgical hospital of the metropolis, and placed alone in the east of London, it was soon surrounded by a rapidly growing population of a necessitous character, whose wants it felt bound to supply. Within the last twenty years its mortality was remarkably low, ranging from 5 to 7 per cent. of the cases admitted, and attributable mainly to the accidents and surgical operations. I have not been able to trace back the distinction betwixt medical and surgical cases at this hospital further than 1863, but at this time the proportion of the former to the latter was as one to three, while in the last few years the numbers approximate the proportions observed at the other hospitals named, while the mortality has risen from 7 to 12 per cent. In all large hospitals we find that from one-half to three-fourths of the deaths in the surgical department are due to accidents, and as such are freely admitted, since no provision is made by legislative enactment to treat them elsewhere; they are likely to become a growing source of hospital mortality. The ordinary death-rate of surgical cases as deduced from the tables, ranges from 5 to 7 per cent., with a tendency to increase, though the increase is not very decided, and occasionally circumstances intervene to raise it higher in one year or series of years. If we deduct the deaths from accident from the total derived from surgical cases, we find invariably but a small percentage left for other surgical maladies. In the Glasgow Hospital, for example, during the past five years, the deaths in the surgical wards amounted to 1,057,

of which 686 were due to violence, making the mortality in the department 8 per cent., while that of the non-accident cases averaged little more than 5 per cent. Again, at Guy's, during the past seven years, deaths from accidents amounted to 616 out of a total of 984, thereby reducing the death-rate, if we omit the accidents, from an average of 6·5 to a mean of 4·3 per cent. But irrespective of accidents, there are occasionally causes at work in numerous hospitals which have contributed in times past and present to increase the general surgical mortality. The fame of the hospital, the reputation, individual or collective of its staff, on account of diseases necessitating hazardous operations, however successful these may be in the abstract, all tend to increase the ordinary death-rate. Thus at Guy's, during the last twenty-one years, there has been a growing increase in the mortality from operations, which if measured by septennial periods would be represented by an annual average of thirty-eight deaths for the first period, forty-five for the second, and seventy-two for the third, and it would be easy to trace the fatal results to causes which had but a feeble existence before. Another reason, though not a common one, to account for an increased surgical mortality, arises from some special provision being made for the permanent residence of patients with incurable disease in an advanced stage. Such a condition exists at the Middlesex Hospital, where a ward is appropriated for cancer cases, and which has the effect of raising the surgical mortality from 4·8 to 9·3 per cent.* On the other hand, notwithstanding a preponderance of accidents and surgical operations, supplemented by a contingent of incurables, there may exist in the same hospital special departments in which deaths are so little liable to occur that an otherwise heavy mortality is reduced to a comparatively light one. The exclusion of venereal diseases alone from the returns of the last ten years at Bartholomew's, would have the effect of increasing the small surgical mortality of the hospital from 4·3 to 5·6 per cent., and the rejection of the ophthalmic cases would reduce it still further. At Guy's, where accommodation is provided for fifty ophthalmic and forty venereal cases, the mortality among surgical cases maintains an average latterly of 6 per cent., but if these patients were excluded from the calculation, the death-rate would increase to an average of 8 per cent., which is a singularly high one for surgical patients.

Another circumstance influencing the mortality in all general hospitals, may be sought for in the proportion of beds allotted to the separate sexes. We have the authority of the Registrar-General for stating that double the number of deaths occur among

* Report of the Middlesex Hospital, 1874.

the male sex in hospitals than take place among females, and it is a well-known fact that this disproportion cannot be accounted for by any great difference that exists in the accommodation provided for the separate sexes. There is no doubt, however, that in the surgical department of every large hospital there is a considerable preponderance of beds for men in consequence of their greater liability to accidents, and as has been noticed, deaths from these causes are far more numerous than deaths from other surgical complaints. In the medical division again, though the accommodation for the sexes has been more nearly equalised in recent years, the more serious ailments of the male patients tell with greater force on the death-rate, than the diseases of women. In St. Thomas's Hospital, during the most recent epoch referred to in the tables, male patients treated in the medical wards suffered from a death-rate of 21·5 per cent.; while women suffered in the less proportion of 12 per cent.; and at Guy's, during the same interval, among a corresponding class of patients, the death-rate among the male sex amounted to 20·4, and among females to 11·4. From the records of St. Thomas's Hospital we possess the following data bearing on the question of sexual mortality, and extending back nearly a century :—

	Deaths per 100 Admissions.		
	Male.	Female.	Total.
1786 to 1790	7·54	6·62	7·25
'90 „ 1800	8·45	6·98	7·97
1800 „ '10	6·38	5·65	6·45
'10 „ '20	6·88	5·31	6·36
'30 „ '40	9·31	6·73	8·42
'50 „ '60	8·55	6·64	7·76
'60 „ '70	11·14	10·87	11·36
'70 „ '76	14·30	9·47	12·15

It is noticeable that up to the year 1840 the number of male admissions to St. Thomas's Hospital were twice as many as the female, after which the latter increased by degrees until the relative numbers began to approximate, the mortality at the same time increasing in both sexes. The subject of sexual mortality may be still further illustrated by the experience of Guy's, Bartholomew's, and the Glasgow Hospital, though the figures are

for a more recent period; they, however, distinguish betwixt the medical and surgical cases :—

	Mortality per Cent., Medical.		Mortality per Cent., Surgical.	
	Males.	Females.	Males.	Females.
Bartholomew's—				
1842 to 1852.....	15·6	10·0	5·5	5·8
'70 ,, '75.....	19·3	13·6	6·0	4·1
Guy's—				
1854 to 1860.....	15·7	12·1	5·9	4·2
'60 ,, '70.....	18·6	12·4	6·5	4·8
'70 ,, '76.....	19·4	12·9	7·4	4·8

	Mortality per Cent., Medical.		Mortality per Cent., Surgical.		Mortality per Cent., Fever.		Mortality per Cent., Small Pox.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
Glasgow Royal Infirmary—								
1866 to 1871	12·4	10·1	6·8	5·1	15·9	11·3	11·4	8·3
'71 ,, '76	14·6	13·7	8·6	6·8	13·3	9·1	15·3	8·6

Though there is an appreciable increase in the mortality during the short periods referred to in the Glasgow returns, there is not that disparity in the death-rate betwixt the sexes we are accustomed to see in the London hospitals. This arises from the graver character of the female complaints received into the Scotch hospital, when compared with such as are admitted freely to London hospitals, and it is only when we come to examine the mortality of the fever cases that we again recognise the difference. This fact, already illustrated by the experience of the last ten years, is more fully borne out by the following returns, embracing an interval of four years, 1844-47, when one of the greatest epidemics of modern times visited Glasgow and decimated the population. At this period there were no special distinctions made in the official reports of the hospital betwixt medical and surgical cases, but the male and female deaths were carefully distinguished, and those caused by fever were kept apart from the ordinary deaths. The mean death-rate from fever, or rather among all the patients received into the fever department, amounted to 14·8, while that of the ordinary medical and surgical cases was 11·2 per cent. of the admissions :—

Years.	Medical and Surgical Cases.		Deaths.		Fever Cases.		Deaths.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
1844.....	1,234	776	131	66	769	699	82	61
'45.....	1,556	902	134	100	300	235	47	28
'46.....	1,729	1,018	177	100	933	867	109	98
'47.....	1,561	822	228	114	2,771	2,453	508	296

While the mean mortality among males in the general department amounted to 11·10 per cent., and that of females to 10·8, the death-rate in the fever division among the former class maintained an average of 15·6, and among women 11·3 per cent. The mortality from fever at this hospital has undergone extreme variations, sometimes marking an average as low as 10 per cent., and occasionally rising to 15 per cent., but there is no instance of its approaching the high figure which it attained at the London Fever Hospital, particularly in the years 1837-39, when it had an average range of from 23 to 25 per cent.

The questions whether the segregation of the fever stricken in separate hospitals, their being mixed with others in wards appropriated for ordinary diseases, or their isolation in their own homes, have been frequently discussed in relation to the mortality accompanying the disease. It is now generally recognised that during the prevalence of epidemics in large towns, there is a positive necessity for finding separate accommodation for the disease in hospitals specially set apart for the purpose, but it is still very doubtful whether the concentration of a large number of persons suffering from similar maladies has not an evil influence in intensifying the virulence of the disease. It is held by many, and the practice is not yet abandoned in many hospitals, that by placing one or two patients suffering from fever in a large ward with ordinary diseases, their chances of recovery are strengthened, and that the dangers from contagion are reduced to a minimum. Whether this is capable of proof there can be no doubt of the manifest advantages to be gained by a thorough freedom of ventilation in fever wards, and as the subject is closely connected with the points at issue, I may be allowed to refer to a personal reminiscence in connection with the epidemic in Glasgow already referred to. The fever hospital of the city is a branch of the general hospital, situated within its grounds, and up to the period mentioned it had been found adequate to meet the requirements of the population, but in consequence of the extensive prevalence of this particular epidemic, the hospital autho-

rities found it necessary to erect with great despatch in the airing ground in its immediate vicinity, a couple of wooden sheds capable of holding 200 additional patients. These viewed in the light of modern notions were miserable creations for the reception of the sick. One contained two rows of beds, and the other four rows, the latter being divided by a wooden partition about 6 feet high down the centre, against which the heads of the beds rested. The wards were limited to one floor, raised about a foot from the ground, and were open to the roof, which had been expeditiously covered over with a species of asphalted canvas, which, however, was not proof against successive inroads of snow and rain. In consequence of the building being only intended to do duty for a season, very little regard was paid to its durability, and natural ventilation triumphed over art, as the wind at times blew through the interstices of the wooden framework with the force of a moderate gale. This was all very well in summer, but as winter approached the necessity for warming the building became indispensable, and some large chauffers were placed at intervals along the centre, where chimneys, which were chiefly remarkable for their persistent refusal to carry off the smoke, had been hastily extemporised, but not before the cold had become so intense as readily to freeze water which had been spilt carelessly on the floors. And yet, in spite of these numerous shortcomings, the mortality among the patients admitted to the sheds was less than in the spacious hospital adjoining, fitted as it was with every ordinary requirement, and where an agreeable temperature was maintained by a system of heated air in the coldest weather. Dr. Paterson, who was then one of the physicians of the Edinburgh Royal Infirmary, relates a similar experience with regard to the same epidemic.* Here at Edinburgh, the experiment, if by such a name it could be called, went a step further, as in addition to wooden sheds, it was found requisite to have canvas tents pitched on the hospital "green," into which the sick were drafted after the other accommodation was exhausted. In analysing the results of his practice, Dr. Paterson found that in the hospital wards saturated for a century with the emanations of the fever stricken, the death-rate amounted to 15 per cent. for males, and 10 per cent. for females; in the temporary wooden structures to 12 per cent. for males, and 7 per cent. for females; while in the tents it did not reach a higher figure than 5 per cent. over the combined sexes. To follow up the comparison, a physician engaged in extensive district work among the poor of Glasgow during the prevalence of the same epidemic, went so far as to argue that the patients who were treated at their own miserable homes, had better prospects of

* "Edinburgh Medical Surgical Journal," No. 177.

recovery than those received into the fever asylums; that whereas the hospital mortality ranged from 12 to 18 per cent. of those received into it, the death-rate of the patients visited by the parish surgeons attached to various districts of the city, ranged only from 5 to 10 per cent. during the different phases of the epidemic. It is impossible to reconcile these separate influences, but we have good ground for believing, that patients suffering from contagious fever have better chances of recovery in an outhouse or other hastily contrived building, than in the best appointed hospital when it is injudiciously crowded.*

The experience of the Glasgow Hospital has been carefully tabulated in the annual reports of its managing body, from its foundation to the present time, and as it has increased at a progressive pace with the wealth and population of the city, its history may be looked upon as typical of that of the general hospital, founded to meet all the requirements of a manufacturing population. At the date of its establishment in 1795, the population of Glasgow was estimated at 71,000, and up to the end of the century the death-rate among the patients received into the Royal Infirmary, by which name it is best known, did not exceed 5·8 per cent. By the end of the first decade of the present century, the population having increased in the interval to 84,000, the mortality had reached 6·2 per cent.; it then rose to 7·7 per cent. on an average of the ten years 1810-20, the population in the meanwhile increasing to 101,000, while in the following decennium 1820-30, it had risen to 9·1 per cent. Since 1830, and to a less extent before this era, the city has been visited by some destructive epidemics, including fever, small pox, and cholera, which have materially disturbed the normal death-rate, but independent of these causes, there is noticed the same progressive tendency, the mortality during the last five years having reached an average of 10·9 per cent., the population in the meanwhile approaching half a million.

It would follow from the facts previously narrated, that there is no definite law further than habitual custom, by which the accommodation in any hospital is regulated. Nearly all permit more or less expansion when pressure of a particular kind is forced on them, while each preserves some special character depending on numerous causes, the chief of which are the design of original foundation, the nature of the medical organisation, and their affiliation or otherwise with a medical school. We may add to this that, until the time arrived when it was found absolutely necessary to exclude from hospital privileges vast numbers suffering from trivial ailments, the hospital mortality was comparatively small, that with

* "Results of Fever in Glasgow Hospitals and Out-door Practice Contrasted." James Adams, M.D.

the increase of population, the progress of arts and manufactures, together with facilities for locomotion, the demands on the charities multiplied, and involved a more suitable selection of cases which, being critical and urgent, were attended with a corresponding increase in the death-rate.

We will now proceed with the inquiry which *primâ facie* might be expected to throw much light on the past and present mortality of hospitals, namely, the death-rate of such diseases as are usually encountered in hospital practice. I have already referred to fever as affording us very insecure data of comparison, and the same insecurity extends to the nomenclature of diseases generally. The older writers had also a habit of lumping together under the same headings disorders of a totally different organic character; but from such data as we possess, I will endeavour to select some special diseases that may be thought susceptible of comparison. The first series to which I would refer are from the records of Sir Gilbert Blane's practice at St. Thomas's Hospital during twelve years from 1783 to 1795, comprising nearly 2,300 such cases as were likely to fall under the notice of a physician at the period:—

	Cured.	Died.	Mortality per Cent.
Continued fever	493	69	12·2
Intermittent fever	192	7	3·6
Pulmonary consumption	321	70	17·9
Bowel complaints	264	38	12·5
Scarlet fever	3	2	40·0
Small pox	29	12	29·2
Erysipelas	18	1	5·3
Dropsy	203	77	27·5
Diseases of women	256	18	6·5
Venereal disease	202	3	1·4

In addition to the above, Dr. Blane refers thirty deaths to what he terms obscure, anomalous, and complicated affections. The general death-rate at St. Thomas's at this period ranged from 7 to 8 per cent., while at Guy's, with a smaller number of surgical cases, it was a fraction more than 10 per cent. From tables in the appendix, we gather that the deaths in Guy's, from a very early period of the same century, were due to very similar causes, while in the course of the present century several of these diseases have almost entirely disappeared fron the death register, and their place has been usurped by others of an equally fatal tendency. Dr. Moses Buchanan, in a history of the Glasgow Royal Infirmary, furnishes a consecutive list of the diseases treated in that institution from its origin till the year 1831, from which the following abstract has been made to show the comparative frequency of the causes most likely to contribute to the mortality. With the

exception of the three years 1829-32, we have, however, no special record of the deaths from these affections :—

	Consumption.	Dropsy.	Fever.	Accidents.
1794 to 1800	50	108	327	126
1800 „ '10	284	289	810	467
'10 „ '20	496	505	3,700	932
'20 „ '30	469	597	6,868	1,877

From the experience of the three years referred to, we have the following results illustrating the death-rate in some of the more important medical and surgical affections :—

	Total Cases.	Deaths.	Mortality per Cent.
Accidents	542	63	11·6
Consumption	158	55	34·7
Dropsies	178	69	33·1
Dysentery	79	19	24·0
Peritonitis	14	7	50·0
Tetanus	6	5	83·3
Diseased joints	84	6	7·1
Paralysis	86	8	9·3
Fevers	3,242	321	9·9
Heart disease	34	19	55·8
Inflammation of lungs	204	14	6·8
Herniotomy	8	4	50·0
Rheumatism	280	4	1·4
Small pox	23	4	17·3
Lithotomy	15	2	13·3

It may be interesting to compare this table with others collected from the same hospital at separate intervals of a subsequent date, and for this purpose I will add two quinquennial periods, from 1844 to 1849, and from 1871 to 1876, limiting the diseases to four typical affections, and the surgical affections to two important operations and to accidents :—

	1829-32.	1844-49.			1871-76.		
	Mortality per Cent.	Cases.	Deaths.	Mortality per Cent.	Cases.	Deaths.	Mortality per Cent.
Consumption	34·8	431	186	43·1	1,526	460	30·1
Pneumonia	6·8	141	38	26·9	636	154	24·2
Rheumatism	1·4	484	9	1·8	654	11	1·6
Fever	9·9	10,622	1,839	17·3	2.359	176	7·4
Accidents	11·6	2,182	272	12·4	5,389	686	11·4
Herniotomy	50·0	14	6	42·8	73	36	49·7
Lithotomy	13·3	30	3	10·0	39	4	10·2

But I doubt whether much can be made of this table that will throw light on the question of past and present mortality. Setting aside fever and its changing types, and consumption, which showed a much larger death-rate during 1844-49 than at other periods, and which doubtless was due to the bulk of the accommodation being absorbed by fever, the only malady which shows a marked disparity in its results is pneumonia, which seems to have attained a low death-rate, amounting only to 6·8 per cent., in the first period. It is impossible to account for this discrepancy, which may as likely as not be due to some error in the diagnosis or registration. Similar errors are not so likely to have occurred with regard to important surgical operations and their results, and in connection with this hospital we have uninterrupted returns from its commencement to the present time of the results of amputations of limbs, a subject which is often referred to as a test of the healthiness or otherwise of a hospital. I will give these from official sources in the following table, compiled from the statistics already published.* To avoid error in instituting comparisons, all the cases tabulated have been confined to amputations which have been made through the shafts of the bones alone, and those operations which have involved the loss of more than one limb have been purposely excluded :—

Glasgow Hospital.	1795-1838.			1839-49.			1849-74.		
	Cases.	Deaths.	Mortality per Cent.	Cases.	Deaths.	Mortality per Cent.	Cases.	Deaths.	Mortality per Cent.
Amputation of—									
Arm	23	11	47·8	49	15	30·6	134	45	33·5
Forearm	15	—	—	35	4	11·4	112	13	11·6
Thigh	12	11	91·6	32	21	65·6	118	63	52·5
Leg	22	15	68·1	53	22	41·5	109	49	44·9
	72	37	51·3	169	62	36·6	473	170	35·8

There is here a decided improvement in the last two intervals when compared with the first, and a slight improvement in the last interval when compared with the second. Numerous circumstances may combine to render results of amputation very different in one hospital when compared with another, but as we are dealing now only with the gross returns, it is not essential that we should further particularise details. For comparison with the above, we will now take the returns of the Edinburgh Hospital, which is of

* "Medical Gazette," vol. xxiv ; "Edinburgh Medical and Surgical Journal," No. 181 ; "Glasgow Medical Journal," 1874. Dr. Thomas.

older date considerably than that of Glasgow; and it may be noticed that primary amputations, or such as are necessitated from injury to life and limb, are more frequent in Glasgow than in Edinburgh. The returns are for a term of years of comparatively recent date, being limited to the ten years 1859-68:—

Edinburgh Hospital.*	Cases.	Deaths.	Mortality per Cent.
Amputation of arm	28	15	53·5
,, forearm	58	12	20·6
,, thigh	199	96	48·2
,, leg	86	38	44·1

* "Edinburgh Medical Journal."

This exhibits an average mortality over all amounting to 43·3 per cent., but it will be observed that what is usually looked on as the most fatal amputation, namely that of the thigh, more than exceeds in number all the others. We are now at liberty to compare with the returns of the Scotch hospitals the records of amputations at Guy's, which I will tabulate over three consecutive septennial periods, beginning with the year 1854:—

	1854-61.			1861-68.			1868-75.		
	Cases.	Deaths.	Mortality per Cent.	Cases.	Deaths.	Mortality per Cent.	Cases.	Deaths.	Mortality per Cent.
Amputation of—									
Arm	23	8	34·7	41	15	36·7	42	10	23·8
Forearm	21	2	9·5	18	6	33·3	19	3	15·7
Thigh	106	31	28·3	110	48	43·6	156	59	37·8
Leg	59	20	33·9	102	36	35·3	78	26	33·3

Note.—The average mortality for 1854-61 was 29·2 per cent.; for 1861-68, 38·4 per cent.; for 1868-75, 33·2 per cent.

Notwithstanding the fact that at this hospital as well as at others, resection of joints has taken the place in very many instances of the more formidable operation of amputation, leaving the latter alternative for the least hopeful class, there is an appreciable improvement in recent years, not only in the results of amputation but in surgical operations generally. In the absence of statistics of an early date, it is not easy to prove this, but considering the great improvements which have been made in surgical appliances, dressings, and in sanitary precautions generally, as well as the favourable results which daily attend operations which were

formerly looked upon as hopeless, there is ample evidence to show a great advancement in this department of surgery. At the same time, in spite of these advantages, the surgeon has to contend with numerous difficulties in the course of his hospital practice, which have certainly not diminished with advancing years, and which from time to time have seriously interfered with the success of surgical operations. In Sir James Simpson's compendious statistics of 2,089 cases of amputation, collected from English and Scotch hospitals, and mainly limited to the decade 1861-70, the gross mortality was found to average 40 per cent. of the cases. These were contrasted with an equal number of amputations performed by private practitioners on patients at their own homes, in which the death-rate was alleged not to have exceeded 10 per cent., the difference being so remarkable that the accuracy of the returns was soon called in question. It was argued, and not without reason, that information obtained from a variety of sources and from separate individuals, all desirous of putting the best complexion on their individual efforts, was scarcely a fair tribunal of appeal, and could not be contrasted with the accredited sources of hospital experience; yet, after making ample allowance for the deficiencies referred to, and which are not entirely unknown even in hospital practice, we are still warranted in believing that there is a balance remaining in favour of external success. This conclusion has not been arrived at without due thought of the many fallacies which beset all questions in which the data for guidance are of an unreliable character, but mainly from an experience of the risks inseparable from the surgical treatment of the sick in large bodies when contrasted with individual isolation. To the former condition the opprobrious term of hospitalism has been given, and, in the absence of a milder word, it is significant of the dangers which encompass hospital practice, and which are found to increase *pari passu* with the neglect of sanitary precautions. In dealing with the subject of amputation, we are, in fact, embracing the recognised conditions which originate and propagate the evils alluded to, whether they arise from contagion in the first instance or from the after effects of the operation itself.

Apart from the progress of surgical cases, which after all have but a subordinate effect on the general hospital mortality, it is our duty to consider more in detail the main factors which contribute to a high death-rate. The most important of these is undoubtedly consumption, a disease which as a rule is admitted to all general hospitals, though there may be regulations of more or less stringency with respect to the admission of the patients and their periods of hospital residence. When we know from the registrar-general that one-ninth part of the mortality of all ages, and one-fifth

of the deaths of the adult population of this country are due to the ravages of this disease,* it is but fair to expect that it would bring its influence heavily to bear on the hospital death-rate, especially in asylums instituted for its reception, but as was noticed in a previous page, there is no absolute rule in these matters, and the latter may show as low a death-rate as the others intended for general purposes. The main plea for special hospitals, founded on the assumption that patients suffering from incurable and other chronic maladies are not welcomed by other hospitals, can hardly hold good with regard to chest diseases, as the proportion of these treated in the latter, range, as we shall see, from one-fifth to one-tenth of the total number usually under treatment. At the same time the utterly hopeless character of consumptive cases renders it obligatory on the part of those entrusted with the selection of the patients, to place checks on their indiscriminate admission. In general hospitals this check is felt in the exclusion of patients in the first stages of the malady, among those who are more or less able to look after themselves, while the greater number received either suffer from some acute form of the malady, or are in a condition where to refuse admission would be tantamount to an act of cruelty. In the special hospital, on the other hand, admissions are regulated by the recommendation of subscribers, and as often happens these are far more numerous than the provisional accommodation, and as the least advanced cases of the disease are presumably most susceptible of benefit, there is a reasonable argument for their selection being preferred to those of a less hopeful character. Perhaps the best example of a special hospital is that instituted in the year 1841 at Brompton for the treatment of consumption and diseases of the chest, which was noticed to have had a death-rate of 10 per cent. in recent years, while some of the general hospitals greatly exceeded this figure. It may be further shown that while the death-rate is increasing in the general hospitals, there is some reason to believe that it may be diminishing at the special; at all events, such is the experience of the particular hospital under discussion. In a report of this institution, embracing a period of six years, from 1842-48, it is stated that $18\frac{1}{2}$ per cent. of the cases treated in the interval terminated fatally; and in the next report of the medical staff, extending over thirteen years, from 1849-62, the death-rate was reduced to 14·9 per cent., while the most recent annual reports bring it down to the very low figure of 10 per cent. In contrast to this, we learn from the statistical tables of Guy's and St. Thomas's, that the mortality of consumption in the former amounted to 40 per cent., and in the latter to 30 per

* Supplement to the Thirty-fifth Annual Report.

cent.; while the group of chest diseases in both institutions has an average death-rate of 25 per cent. On a recent visit to the Brompton Hospital I found that out of 248 inmates then resident in the institution not more than 12 were confined to their beds, and the resident medical officer assured me that this was a fair average of the number incapable of attending to their own wants; while at Guy's Hospital, at the same time, there were 38 cases of consumption, of which 8 alone were in a state to leave their beds. The lengthened residence of the patients at the Brompton Hospital, amounting to an average of seventy-five days, is peculiar, and though we are accustomed to look upon a prolonged stay of medical cases as one of the main factors of the hospital death-rate, it may, by excluding critical and advanced cases, have a tendency directly the reverse. We are also informed from a report of the medical staff, that on the occasion of the opening of a new wing of the hospital in 1855, and the greater facilities of admission afforded in consequence, there was a considerable accession of deaths, showing that while increase of accommodation in the general hospital may be attended with a diminished mortality, that of a special hospital for chest complaints is accompanied with directly opposite results. It may consequently be accepted as a general rule that the mortality of a general hospital is mainly influenced by the facilities or otherwise, given to the admission of advanced cases of consumption and other chest diseases, and in illustration of this fact I have constructed the following table, compiled from official sources, showing the proportion of chest complaints with the death-rates in several large hospitals during recent years. It is assumed that the same influences were at work in times more remote though in a modified form:—

	Consumption.		Other Chest Diseases.		Mortality per Cent. from both.	General Death-Rate.	Ratio of Chest Diseases per 1,000 Patients.
	Cases.	Deaths.	Cases.	Deaths.			
Bartholomew's .	135	63	481	133	31·8	9·8	106
St. Thomas's	807	246	1,198	240	20·0	8·5	73
Guy's	216	72	390	99	28·2	8·8	114
Glasgow	322	108	816	134	21·3	11·7	218

The numbers have been taken for separate years, with the exception of the returns from St. Thomas's, which extend over the period from 1857-61. The results are that on an average 128 in every 1,000 patients are treated for diseases of the respiratory organs (cardiac diseases being excluded), that the death-rate among the phthisical has a mean of about 33 per cent., among other chest diseases 21 per cent., or taken together the gross

mortality would amount to 25·3 per cent., or about 1 in 4 of the patients treated for chest affections. There is every reason to suppose that the increasing death-rate in most large hospitals depends on the larger number of chest diseases being admitted than was formerly the rule. We have already seen how Guy's Hospital may have been an exception to this rule, judging from the death returns of the latter part of the eighteenth and first half of the nineteenth century; but in the three epochs referred to in connection with the Glasgow Hospital, the fact is clearly established. Taken consecutively, the first interval indicates a death-rate in consumption of 34·8 per cent., and of 7·8 per cent. of the total deaths occurring in the hospital. In the second period, excluding the enormous fever returns, the deaths amounted to 43 per cent. of the cases of consumption treated, and to 14 per cent. of the total deaths from ordinary medical and surgical cases, while in the third period, embracing the past five years, the deaths from consumption alone, still excluding fever and small pox, amounted to 16·6 per cent. of the total mortality.

The next disease I purpose to refer to, with the object of discovering whether any material change has occurred by which its influence on the hospital death-rate has been felt, is pneumonia, or inflammation of the substance of the lungs. It is very probable, especially prior to the general adoption of auscultation in hospital practice, that other affections, involving diseases of adjacent tissues, may have been mixed up in the registration of this disease. The very small mortality adduced from the earlier returns of the Glasgow Hospital, and which do not exceed 7 per cent., would seem to give ground for this opinion. In the subsequent interval, when it is to be assumed that the characters of the disease were better understood, it was distinguished by a death-rate of nearly 27 per cent., while in the more recent epoch of five years it is slightly reduced, being now 24·2 per cent. Now in comparing these rates with others, we find that in the Edinburgh Hospital from 1839 to 1841,* there was a death-rate in pneumonia of 35·2 per cent., the highest I have been able to discover at any hospital; and afterwards from 1846 to 1850, the mortality at the same hospital was reduced to 27·7 per cent., still a high rate, but not higher than that observed at Guy's and Bartholomew's during the last ten years. It may be mentioned in passing, that in the interval from 1840 to 1850, a remarkable change was taking place in the medical treatment of all inflammatory disorders, and in none was this more marked than in the disease under consideration. Dr. Bennet, who was then registrar as well as physician to the

* Appendices to the Reports of the Managers. J. Hughes Bennet, M.D.

Edinburgh Hospital, and from whose statistics I quote, was also one of the ablest and most zealous advocates of the change, and the results of his experience are given in his "Clinical Lectures," which refer to seventy-eight cases under his care in the hospital, and which were attended with but three deaths. Now, considering that in the chief London hospitals we have had a mortality in pneumonia ranging from 14 to 29 per cent. during the last twenty-five years, and with small probability of abatement, it is unreasonable to suppose that we can make a standard of comparison from individual experience alone. During the past twenty years many hospitals have issued annual reports giving a summary of diseases treated with their results, and although these documents are not remarkable for much uniformity, the information they impart may be relied on as trustworthy. From these I have culled the following data, to illustrate rather the difficulty to be encountered in arriving at a fair estimate of the mortality in any one disease, than with the object of showing whether or not the death-rate has undergone any material change in the intervals referred to:—

Years.	Guy's.	Years.	St. Thomas's.	Years.	Bartholomew's.	Years.	Dublin Hospitals.
	Per cnt.		Per cnt.		Per cnt.		Per cnt.
1853–65	22·4	1856–60	14·3	1860–67	29·3	1860–68	15·2
'65–72	27·1	'74	21·6	'67–75	19·6	'70–75	19·0

Combining these with corresponding returns from the Edinburgh and Glasgow hospitals, we have a death-rate in pneumonia equivalent to 24 per cent. of the cases treated, and probably this is as near an approximation to the hospital mortality of this affection as we can hope to obtain.*

I had purposed adding to the short list of prevalent diseases, one or two others which have been familiar inmates of every general hospital from time immemorial, but the remote data we possess on these matters are so vague and unsatisfactory, that it would simply be a waste of time to enter on the inquiry. It will be a subject of more interest to inquire into the history of such affections, as we have reason to know were far more generally met with in public hospitals than they are at the present day, the chief of which were fever, small pox, ague, and scurvy, the two former contributing largely to the general death-rate, while the others being comparatively mild affections were readily remediable. I

* Dr. Aitken, in his "Practice of Physic," from the returns of nearly 5,000 cases of pneumonia treated in the hospitals in Virginia during the civil war, makes the death-rate at a less figure, 22·8 per cent.

have already referred to the eccentric effects of fever and small pox in modifying the death-rate from time to time, and it is a question germane to this inquiry whether these diseases as they are exhibited in hospitals, have increased or diminished in their intensity. As contributing to this end, I give the results of the treatment of fever at three separate intervals in the history of the Glasgow Hospital, beginning with the year 1829 and terminating with 1875. During the first epoch, comprising the ten years 1829-38, the mortality ranged from 8·7 in the two years 1831-34 to a maximum of 15·9 in 1836, while the mean rate over the period was 11·7 per cent. In the next decade, 1839-48, the mean death-rate was very nearly the same, namely, 11·9 per cent., while the range was greater, rising as high as 16·5 per cent. in the year 1839, during a severe outbreak of typhus, and falling to 5 per cent. in 1843, in the course of an epidemic of relapsing fever. Taken over the two periods, the mortality among the male sex exceeded that of the females by nearly 4 per cent., the relative proportion being 13·1 of the former, to 9·4 per cent. of the latter; at the same time females formed the majority of the patients received into the hospital. We will now contrast these figures with the results of the twelve years 1864-75, which exhibit an average death-rate of 13·3, or nearly 2 per cent. higher than the mean of the two previous intervals, the deaths among the male sex averaging 15·5, and of the females 10·4 per cent. The annual mortality in the interval ranged betwixt a minimum of 7·7 per cent. in 1871, and a maximum of 18·1 per cent. in 1873, and during the last few years of the period the male admissions began to exceed the female. In the Fever Hospital at Homerton, opened in 1871 under the Metropolitan Asylums Board, there have been treated 3,390 fever patients, with 601 deaths, which gives a gross mortality of 17·7 per cent., but as fully one-third of the patients were sufferers from scarlatina, known to be much less fatal than typhus or enteric fever, the returns can scarcely be compared with those previously quoted, although these are also greatly diluted with milder epidemics. We are not warranted in concluding from these and similar facts which might be adduced from the experience of other hospitals, that fever taken in its largest sense is either more or less deadly in its effects now than it was in former times. It is very possible that by a better system of selection, and from an improved knowledge of passing epidemics, many patients suffering from mild febrile attacks are now excluded from hospitals, and the mortality may appear to be intensified in consequence. This knowledge has at all events been invaluable in awakening us to the fact of the co-existence generally among the population of all large towns of two forms of fever, one depending on defective drainage or bad water, and the other arising

from deficient food and overcrowding, both causes within the province of sanitary legislation.

The virulently contagious character of small pox has always rendered it an unwelcome guest in every general hospital, and means were taken to have the disease isolated in separate rooms, wards, and in at least one hospital long before it was thought necessary to adopt the same alternative with regard to fever. As the Small Pox Hospital was instituted as much for the purposes of inoculation as for ordinary small pox, the data we possess of the mortality of the disease in that hospital during the last century are fallacious, and I will refer again for information on this point to Sir G. Blane's experience at St. Thomas's towards the close of the last century. In the course of his eleven years' practice there, Dr. Blane had under his care 41 cases, which were attended with a death-rate of 29·2 per cent. This was prior to the introduction of vaccination, and we have no authority for believing that any of the general hospitals received patients with inoculated small pox. Dr. Marson, of the Highgate Small Pox Hospital, gives us a return of 4,896 cases treated in that institution betwixt the years 1836 and 1855, of which 488 died, being at the rate of 9·9 per cent., and he also refers to the epidemic of 1863-64, which was attended with a much higher mortality, notwithstanding the general extension of vaccination.* The records of the Glasgow Hospital supply more definite details of the progress of small pox. When the branch building for fever was erected in connection with the general hospital, numerous small rooms opening into the wards were specially set apart for cases of the disease. These were found sufficient for ordinary purposes, but on the outbreak of epidemics of small pox it was frequently found necessary to occupy a couple of wards (male and female) with patients suffering from the disease. Nine years after the opening of the institution, only 22 cases had been received, and during the ten subsequent years 33 more were treated. The epidemic of 1823-24, felt severely in London, made an appreciable accession to the annual numbers, which averaged 45 for each of these years. From 1825 to 1835 the total cases amounted to 204, more than half the number being furnished by the two last years of the term. This epidemic reached its height in the following year, 1836, and, to render its history, as well as the events of the succeeding years, more intelligible, I will give the returns in a tabular form. These extend over a period of twenty-one years, divided into septennial periods, and are taken from the official records of the institution.

* "Reynolds' System of Medicine;" article, Small Pox.

Years.	Cases.	Deaths.	Years.	Cases.	Deaths.	Years.	Cases.	Deaths.
1832.....	3	1	1839	59	15	1846	99	10
'33.....	14	5	'40	61	18	'47	84	21
'34.....	62	4	'41	26	—	'48	48	13
'35.....	72	18	'42	38	5	'49	43	12
'36.....	110	45	'43	13	3	'50	78	18
'37.....	75	8	'44	10	—	'51	163	30
'38.....	35	10	'45	22	4	'52	115	19

Note.—The mortality per cent. for 1832-38 was 24·5 per cent.; for 1839-45, 19·2 per cent.; for 1841-52, 19·5 per cent.

The death-rate among the vaccinated taken over the whole period amounted to 7·1 per cent., and among the unvaccinated to 31·3 per cent. Since the close of the term active measures have been taken in Scotland to ensure a compulsory system of vaccination, and after 1871 other arrangements have been made for the treatment of small pox in Glasgow, apart from the general hospital; but the experience of the last six years, 1866-71, when small pox was still received into the hospital, gives a gratifying diminution in the mortality returns from any previous interval, the number of cases taken in during the time having amounted to 260 and the deaths to 28, equivalent to a mortality of 10·7 per cent. over protected and unprotected. Now from the hospital at Homerton, which was built for small pox as well as for fever, and which was opened in 1871, we find that there have been received into the establishment 4,372 cases of the disease, of which 811 terminated fatally, indicating a death-rate of 18·5 per cent.* Among these the vaccinated suffered in the proportion of 7·6 per cent., and the unprotected to the extent of 35·1 per cent., figures which approximate to the proportional death-rate in the Glasgow Hospital in the first half of the century, though the advantage is rather with the latter institution. The solution of the problem rests in the efficacy of vaccination, and the fact that seventy years after its discovery one in 5·4 of patients attacked with small pox should fall victims to the disease is a severe commentary on the sanitary arrangements at our command for successfully grappling with these epidemics.

In the case of intermittent fever, we have fortunately a disease which, however extensive its prevalence may have been in times gone by, left but little mark in the death register, and is now rarely seen in indoor hospital practice in this country. Dr. Blane refers to 199 cases of ague which occurred at St. Thomas's during his term of office, with seven fatal results, but I have not been able to discover any death from the disease in the modern experience of

* Report of Fever and Small Pox at Homerton Hospital, 1876.

any hospital. We may gather from its infrequency that the causes which formerly originated it have been in great part removed by efficient drainage. Especially is this the case with numerous districts on the banks of the Thames, formerly pestilential marshes, as Lambeth, Erith, and Plumstead, which annually contributed their quota of intermittent fevers to the wards of Guy's and St. Thomas's.

Besides diseases attributable to malarious causes, there were others depending on faulty diet, which were much more commonly met with in the last and beginning of the present century than they are at the present day. Apart from fever, the result of famine, the chief of these dietetic distempers was scurvy, which however was much more frequently noticed in an endemic form in army and naval hospitals than in the general hospitals of the country. As the disease was equally under control with ague, its existence had scarcely an appreciable influence on the hospital death-rate. The last account of any formidable outbreak of scurvy, as it exhibited itself in hospitals, was in 1847, when the poor were still suffering from the potato famine, and when 102 cases were received into the Glasgow Hospital, with but one fatal result, probably due to some accidental complication.

Before proceeding to discuss in general terms the remaining factors which have indirectly influenced hospital mortality in past and present times, and their limits of prevention, it may be desirable to refer in this place to a class of special hospitals of early date, whose history has been unhappily associated with many fatal objections. Founded with the benevolent aim of enabling the poor to obtain the best medical skill, combined with a comfortable home at a critical period of their lives, lying-in hospitals can hardly be said to have successfully fulfilled the object of their promoters. That the evils associated with them have long since been thoroughly known, may be judged from the very slow progress they have made in public estimation during the last hundred years, when compared with other curative establishments throughout the country,* and judging from recent disclosures, there is small probability of their regaining general confidence and support. In attempting an analysis of the results of practice in some of the more prominent of these institutions, it is unfortunate that we should have no well-defined standard of death-rate proportion in child-bearing to aid us. The nearest approximation to it may be found in the returns of the registrar-general, from which we learn that in the course of the twenty-eight years 1847-74, the deaths among mothers in England and Wales have been at the rate of 5 per 1,000 children born alive,

* In London, with one insignificant exception, the date of the last foundation was 1765.

the annual mean ranging from 4·2 in 1857 and 1859, to 6·9 per 1,000 in 1874. From the fact of still-born children being omitted from the register, and especially from a well-known inclination on the part of a large body of medical practitioners to assign deaths after confinement to other causes rather than to accidents of childbirth, the proportion stated above is generally thought to be considerably under the mark. On the other hand, when we come to examine the certified experience of maternity charities, where women are attended by medical students at their own miserable homes, we have results which show the dangers of parturition in a much more favourable light. In summarising the annual returns of the extern maternities in connection with Guy's, Bartholomew's, and St. Thomas's Hospital for the twenty-one years 1856-76, comprising an aggregate of 74,850 cases, and where there can be no conceivable object in concealing the true cause of death, the mortality among mothers has not been found to exceed 4·1 per 1,000 deliveries.* In comparing this estimate with those which rule in lying-in hospitals, it is desirable (in order to appreciate the disparity) to extend the data over as long a period of time as we can obtain reliable records. The largest establishment of its kind, and also the oldest, is that long known as the Rotunda, or Dublin Lying-in Hospital, which has the rare good fortune to possess statistics of its annual experience from its foundation to the present time. The numbers referred to in the following table comprise 198,481 cases of confinement in that hospital, which were attended with 2,778 deaths to mothers, being equivalent to a death-rate of 13·9 per 1,000:—†

Rotunda Lying-In.

	Deaths per 1,000 Mothers.		Deaths per 1,000 Mothers.
1745–60	11·5	1811–20	15·0
'61–70	14·8	'21–30	13·3
'71–80	10·6	'31–40	13·1
'81–90	9·6	'41–50	13·6
'91–1800	8·8	'51–60	15·6
1801–10	9·7	'61–70	32·7
		'71–75	21·—

It will be noticed that while the death-rate was 10·3 per 1,000 during the last half of the eighteenth century, diminishing gradually towards its close, it rose after the first ten years of the present century to 13·3 for the first half, and since 1851 it has increased to the large average of 31 per 1,000. When we know that this insti-

* See table in Appendix.

† Summarised from "Dublin Medical Journal," vol. 1869; and from Dr. Johnston's Annual Reports, from 1868 to 1875.

tution is most ably administered, that it has the reputation of being the best midwifery school in the kingdom, and that its sanitary arrangements are of the most perfect description, it is impossible to avoid the conclusion that there must be some hidden cause at work to account for the dangers which appear to be inseparable from all hospitals of a similar character. The records of the London lying-in hospitals are not so comprehensive as those of the Rotunda, and are of more recent date, but we are indebted to the younger Heberden for an account of the annual results of the British Lying-in Hospital from the date of its foundation till the end of the century, during which time 25,892 patients were confined at the institution, with 391 deaths, being equal to an average mortality of 15·1 per 1,000. During the last twenty-two years the mortality has been nearly the same, viz., 15·7 :—

British Lying-In.

	Cases.	Deaths.	Deaths per 1,000 Mothers.
1749–58	3,292	78	23·6
'59–68	4,773	94	19·6
'69–78	5,637	106	18·8
'79–88	5,513	91	16·5
'89–1800	6,677	22	3·2
1854–64	1,181	11	9·3
'65–75	2,059	40	19·4

This hospital, it will be observed, commenced its operations with a very heavy death-rate, which improved materially as the century advanced, and during the last twelve years from 1789 to 1800, it diminished to the small proportion of 3·2 per 1,000 confinements. The circumstance has been noticed by Dr. Guy* as indicative of the great improvement which took place in the public health in the latter part of the century, and is borne out by the returns of the Dublin Hospital just quoted, as well as by the experience of the general hospitals already referred to. We have also an early record of the City of London Lying-in Hospital, extending over twenty years at the fall of the past and beginning of the present century, showing that during the interval the mortality of that institution did not exceed 5 per 1,000. I will give the numbers in full, as they have been kindly supplied to me by Mr. Outhwaite, the secretary :—

* "Lectures on Public Health."

City of London Lying-In.

	Cases.	Deaths.	Deaths per 1,000 Mothers.
1790–1800	4,456	26	5·7
1800–10	4,097	18	4·3
1855–65	5,378	69	12·8
'65–76	4,751	68	14·3

The mortality during the past twenty-three years has consequently been at the rate of 13·5 per 1,000, which, taken on the whole, is a more favourable return than is obtained from any kindred establishment. But the hospital which, above all others in the country, has tended to throw discredit on lying-in institutions, by reason of its high mortality, is that known as "Queen "Charlotte's," instituted in 1752, for the reception of married as well as single women. Whether the results were more favourable in the past century than in the present, we have no means of knowing, as the figures at our command do not extend further back than 1828, but even in the old hospital, which it was thought necessary to demolish on account of its excessive mortality, the deaths were less numerous than in the new. The following table, summarised from the annual results, will illustrate the experience of the hospital from 1828 :—†

Queen Charlotte's Lying-In.

	Cases.	Deaths.	Deaths per 1,000 Mothers.
Old Hospital—			
1828–38	2,035	35	17·1
'38–48	1,937	35	17·8
'48–56	1,496	42	28·0
New Hospital—			
1856–65	3,285	123	37·4
'65–76	4,328	97	22·3

The mean death-rate in the old hospital was consequently 20·4, while in the new it has amounted to 28·8 per 1,000. The building has accommodation for forty beds, and does not appear to have suffered from overcrowding, the mortality being at its highest in the years 1859 and 1860, when it marked a mean of 84·3 and 70·3 per 1,000, while the total numbers treated in these years were among the smallest annual averages. I will conclude

* "Medico-Chirurgical Transactions," vol. xlvii, Dr. Brodie. The "Lancet," January, 1876, Mr. Charles Hawkins.

these few remarks on lying-in hospitals, by a tabular contrast from the practice of the four metropolitan obstetric hospitals, and the three extern-maternity charities of the endowed hospitals for the same period of twenty-two years (1855-76) :—

	Queen Charlotte's.	British Lying-In.	General Lying-In.	City of London.	Guy's.	Bartholomew's.	St. Thomas's.
Deaths per 1,000	28·2	15·7	14·8	13·5	4·1	3·1	3·5

In the course of the previous pages I have but scantily referred to the effect on mortality of vices inherent or imported into the hospital itself, though this subject so intimately connected with preventive medicine, claims an importance second to none in the entire range of hospital economy. That hospitals are necessary for the safety and medical treatment of the sick poor is an undisputed fact; that they are also essential for medical education is equally incontestable, but in accepting the facts as indicative of the two great ends they seek to fulfil, there are certain objections attached to them which make us hesitate before pronouncing them faultless. The isolation of the sick poor in mediæval times apart from the healthy community, the crowding together of outcasts suffering from some loathsome complaint in an ill-contrived building, and the feeling of apathy, if not of horror, with which they were regarded by the world outside, were not calculated to excite public interest in their behalf. The same causes which we read of as giving rise to excessive mortality in gaols, workhouses, camps, and crowded ships, had no doubt their counterpart in lazar houses at home as well as abroad, and have occasionally, though not often, invaded the wards of our British hospitals. These are the same which from time immemorial have been associated with a high death-rate among all cases, and may be reduced to the four conditions which we now know to be irreconcilable with health, namely, overcrowding, which is only another name for foul atmosphere, innutritious or improperly regulated diet, bad water supply and want of cleanliness. Prior to the modern hospital period, that is to say before the eighteenth century commenced, public and personal hygiene appear to have been utterly disregarded in this country, and the numerous houses employed for lepers were established more as refuges for the discarded than as asylums for the sick. The scanty supply of vegetables and fuel, together with the filthy habits of the people, and the malarious exhalations, especially in towns, all contributed to the production of disease of a fatal character, so that in London the death-rate during the latter half of the seventeenth century, as calculated by Dr. Farr from the bills of mor-

tality, was as high as 80 per 1,000, nor was it till the eighteenth century was considerably advanced that a material improvement took place. The benevolent aims of those who originated the few hospitals in this country in the first half of the past century, embraced not only the immediate wants of the sick poor, but also extended to the necessary requirements of the buildings intended for their reception. Though not in much repute at the present time, many of these were constructed on the self-same principles which guide our modern ideas on hospital sanitation, and all were greatly in advance of anything which had hitherto been done either in this or other countries. Into such all kinds of disorders were admitted, without regard to their morbific influences;* yet however disastrous the results may have been, they were apparently less formidable than parallel occurrences which have happened in times less remote. The eighteenth century represents the turning point in the health history of this country, when the mortality in London alone fell from the figure just quoted to 50 per 1,000 annually then living of the population, leaving its mark on the diminishing death-rate of the hospitals, especially towards the close of the period. The measures periodically employed to improve the hospital health, the cleaning and whitewashing, were in part much the same as they are now, but as the population rapidly increased, and there was no corresponding increase in the eleemosynary accommodation, there may have been a tendency to crowd too many sick in the same building, and although we are not able to point to any very appreciable differences in the mortality in consequence, the evil was so palpable, that in course of time it cured itself, and the question of sufficiency of individual cubic space gradually became of paramount importance in every hospital, old and new. At the same time, and for the same reasons, classification of patients, according to their diseases, coupled with isolation of the contagiously affected, gradually took the place of the mixed system. The first step towards it consisted in the separation of syphilitic cases from the others, possibly as much for moral as for physical reasons. Afterwards when epidemics prevailed, and hospital patients became liable to attacks from being placed in proximity to the contagiously affected, necessity required that rooms and wards should be set apart for their reception, and this proving insufficient, special hospitals were extemporised or founded to meet the ever recurring visitations. These again with the enormous growth of the population have been found utterly unable to cope with the demands

* We have, however, no record of patients suffering from the plague having been admitted into the only two hospitals then existing; in fact, in an old regulation of St. Thomas's, the admission of plague patients is strictly prohibited.

made upon them, and the medical treatment of the sick poor, which the christian charity of a previous age regarded as a sacred trust, has for the most part been consigned to the control and support of the legislature. With the provisions made in all large towns for the isolation of contagious diseases, there are now no adequate reasons why persons suffering from the same should claim admission to the general hospitals, seeing that they simply multiply the risks inseparable from the practice of these establishments. But even in the best ordered hospitals, it is not always easy to prevent occasional incursions of contagious disease among patients admitted for totally different affections, especially when such distempers assume the epidemic form and are imported from without. In such cases the origin of the infection is usually traced to personal communication of patients with their friends or relatives. The evil was so manifest in London during the epidemic of small pox in 1872, that all the general hospitals, without any preconcerted arrangements, felt it necessary to suspend the usual privileges of allowing patients to be visited by their friends, and the salutary effect of this rule at Guy's and Bartholomew's, and no doubt at other hospitals, was soon apparent. In Howard's time greater license was permitted to the hospital inmate, for besides the privilege of receiving his friends at any hour of the day, he was permitted to visit them at their own homes. The abuses arising in consequence are commented on by the philanthropist, and like most evils connected with the internal government of hospitals, were remedied in time by virtue of their own incongruity.

We have also to consider another class of infectious disorders which, in modern times, have been viewed as the opprobria of hospitals, but which, if subjected to the same summary proceedings as have been recommended in the case of the contagious fevers, the hospital would be robbed of half its usefulness. These are the distempers generated within or it may be imported into the hospital itself, so well known to interfere seriously with the satisfactory progress of surgical complaints, and to contribute to the mortality of such as have undergone important operations, or who may have sustained severe wounds of the surface of the body. It is not very clear how these diseases originate, or by what medium they retain their morbific influence. Viewing them in their worst light, they may be inherent in a building, contaminating its structural elements, but more often they are attributed to a septic atmosphere engendered by the retention or succession of a large number of persons suffering from open wounds. The affections referred to are erysipelatous inflammation as distinguished from the idiopathic forms of the disease, gangrene in its widest sense of unhealthy action in wounds, and pyæmia or blood poisoning, which is

assuredly the most formidable of the three. It is a peculiarity of these occurrences that they may express themselves either singly or in combination, that one or other may arise spontaneously or may be spread by infection, and that they are greatly influenced by atmospheric changes. It is not disputed that they take place in the field of private practice; indeed, we have the highest authority in support of the opinion that the most disastrous form of blood poisoning is equally to be met with outside as within the walls of hospitals, but from the mass of evidence adduced, it is impossible to avoid the conclusion, that in spite of numerous precautions they periodically appear in their most aggravated shape amongst hospital patients. Nearly every hospital in the country has its experience of the ravages of septicæmic disease, and it is well known that surgeons from time to time desist from performing the most trivial operations lest they should encounter this fatal complication. The remedies which have been employed periodically for rooting out the infection well illustrate the prevalent impression, that the disease is to a great extent inherent in the structural elements of a building. Inner walls have been renewed, floors relaid, non-absorbent materials have been substituted for the more porous kind, and, in some instances, entire demolition of the hospital has been the only remedy which was thought worthy of serious recommendation.* It is doubtful whether such arbitrary proceedings as those last referred to admit of justification. If a hospital from its architectural peculiarities be ill-contrived for the treatment of the sick, there is a strong reason why it should be rendered useful for the purpose by structural alterations, and if this be impracticable, to raze it to the ground, but it is scarcely possible to realise such an alternative. It may have been gathered from some previous observations, that in all asylums for the sick we must be prepared to anticipate some almost necessary evils. To permit patients suffering in common to occupy adjacent beds, and to breathe the same atmosphere, is a condition necessarily associated with every establishment for the maintenance of the sick, the evils arising from which can only be grappled with successfully by measures which, on a large scale, it would be practically impossible to carry out. These would naturally consist in a process of individual isolation, the stamping-out, so to speak, of every malady from which there was cause to apprehend infective tendencies, and by providing for its special service a separate apartment, attendants, utensils, and other surroundings. The isolation of one or other of the more hazardous operation cases, as habitually practised at the larger hospitals, testifies to the expediency of the separate system, and is a tacit admission of expected benefit on the part of those

* As at the Lincoln and Norwich hospitals.

who are perhaps least willing to admit the septic tendencies of aggregation. In lying-in hospitals we have an infectious disease, supposed by many to be generically the same as that met with in general hospitals, and which has been the cause of the mortality conspicuous in these establishments. The same principle operating in private life compels the accoucheur to abandon his practice until relieved of the consciousness that he is no longer the instrument of conveying death to others; but in general hospitals the alternatives at our command must necessarily be limited to the speedy removal of the affected from proximity to those not similarly attacked. In most large hospitals provision is now made for the separate treatment of patients suffering from traumatic erysipelas and phagedena in special wards, apart as much as possible from the others, with separate attendants, into which are drafted such as have contracted the disease in the hospital, as well as those who have been attacked with it at their own homes. It is a noteworthy fact in connection with the experience of Guy's Hospital, and it will probably be found to be the same elsewhere, that the number of patients annually received into these wards with infected wounds, directly from the outside, is considerably in excess of those taken from the surgical wards, who may be presumed to have contracted the disease inside the hospital. Though a serious obstacle to recovery, the mortality among patients suffering from the affections specially referred to is scarcely appreciable, nor have we any reason to believe that they are of a more fatal character at the present day than was the case in the past. On the other hand, the fatality accompanying the pyæmic condition has been brought into greater prominence in modern times on account of the progress of pathology and sanitary science, but it is very doubtful whether, as a cause of death-complication in disease, accident, or operation, it is more frequently met with in proportion to the numbers otherwise liable to contract it, now than formerly. If judged correlatively by the experience of lying-in hospitals, there might be some reason to fear that the danger had not reached its acme; but, apart from the doubtful identity of pyæmia with puerperal fever, the preventive measures, which an improved knowledge of the baneful results attending these diseases require, can be more hopefully carried out in the general than in the special hospital. The death register of Guy's Hospital for the twenty-two years 1854-76, contains entries of 436 cases of pyæmia which have occurred during the interval, 171 of which have supervened on surgical operation, while the remaining 265 have followed from injury or disease from which, in many cases, the patients had been suffering prior to their admission. Although the annual percentage of cases has been greater during the latter half than in the former half of the period, the increase

may be satisfactorily accounted for by a corresponding addition to the number of surgical operations, and especially by the accession of a larger number of patients suffering from septic symptoms on admission. Facts of a similar character may be adduced from the returns of other hospitals of approximate size, though, in the absence of unanimity with regard to the pathognomonic characters of the malady in question, the numerical relations are liable to vary with the conceptions of different observers. So far as our knowledge goes, the disease does not seem to have been recognised as the cause of mortality in hospitals till near the middle of the present century, when attention was specially drawn to its frequent occurrence in the Parisian hospitals.* Still it is clear from the numerous observations of the older writers, that a suppurative fever, to which various names were attached, was frequently met with in camps and hospitals after gunshot wounds and other accidents as well as operations, and was the cause of much mortality. In our own day, it is customary to associate old hospitals and those of faulty construction with periodical outbreaks of septic disease, but the data we possess on the subject show, that the mephitic influence is by no means confined to them. Mr. Erichsen, who has paid much attention to the subject, states that hospitals built prior to the pre-sanitary age, that is before 1840 or thereabouts, are peculiarly liable to it, especially on the upper floors, to which, assuming the volatility of the poison it has a tendency to rise. Mr. Cadge, of Norwich, who has long held the office of surgeon to the hospital of that town, asserts that within the last six or eight years, notwithstanding numerous sanitary precautions which previously appeared to secure the patients from attack, the disease had been increasing in virulence from the greater strain on the hospital resources, caused by the necessities of a working population which had increased out of all proportion to the accommodation. Similar experience to that of Norwich might be obtained from the history of other establishments in analogous circumstances; but on the other hand, we have the testimony of the officers of St. George's and St. Thomas's Hospitals, that the disease is not unknown in the airy establishment erected for sanitary purposes in connection with the first at Wimbledon, while in the palatial institution belonging to the latter on the Thames Embankment, pyæmia is as frequently met with as it was in the old buildings in Southwark. Taking every circumstance into consideration, there is no substantial ground for believing that an old hospital, provided its arrangements with regard to individual space, freedom of ventilation, drainage, and water supply are satisfactory, is more likely to develop and spread hospital disease than

* Sedillot, "De l'Infection Purulente," 1849.

those of more recent construction, and that the recurrence of these distempers depends, like the mortality of the hospital itself, on the severity of the surgical diseases admitted to its wards.

In commenting on past and present mortality, it is but fair that some reference should be made to the beneficial influence which an improved knowledge of the resources of medicine might be expected to exert on the results of treatment. A casual glance at the tables representing an increasing death-rate in the hospitals is not calculated to produce an impression favourable to the influence of therapeutics, nor will a closer acquaintance with the subject render it more commendable. There is no experience more painfully evident in hospital narrative than the absence of guiding principles in therapeutics, and when we come to examine the multifarious remedies which formerly were vaunted as specifics, and which have been replaced by others that in the course of another generation will be classed among the fashionable follies of the day, it is impossible to avoid the conclusion that physic, *per se*, is powerless as an agent in prolonging life, or in grappling successfully with the ordinary fatal ailments of humanity. But, in spite of, and parallel with this uncertainty, there has been an educational influence at work in the hospitals, throwing new light on the various departments of scientific medicine, the effects of which are less visible in the hospital itself than in the vastly improved condition of the public health in every district of the country. It may appear sophistical, but it is not the less true, that the high mortality referred to is partly due to the better knowledge we possess of diseased conditions, and consequently of the requirements of the most needy, but, at the same time, unless some controlling power restrained its exercise, the consequences would be disastrous to the main objects which the hospital is required to fulfil. This agent can only be found in the educational department. It is clear that, where hospitals are incorporated with medical schools, they must be provided with all essentials to enable them to convey to the student a clinical knowledge of every department of his profession, and it would be unreasonable to expect that such could be accomplished in a hospital mainly devoted to the worst aspects of disease. The enormous growth of special hospitals of late years, chiefly in the metropolis, although originating as much from motives of personal aggrandisement as from public philanthropy, proves the necessity of having every branch of medicine and surgery taught in the general hospitals. It is possible that the lighter ailments which, as a rule, are treated in the former, may have had some slight effect in appropriating from the latter a certain proportion of their milder cases, but the influence on the general hospital mortality from this cause would be barely appre-

ciable. It is also, I think, evident from the facts narrated, that notwithstanding the tutorial requirements of the great hospitals, there has been latterly a disposition to increase the medical at the expense of the surgical departments, and to eliminate from both a class of patients whose long residence would interfere with a rapid succession of more critical diseases. The division of labour so necessary for the promotion and organisation of the scholastic department must, however, be maintained if it is desired to keep abreast of the requirements of the time, and from this cause, if from no other, it is barely possible that the death-rate in the future will much exceed that which has been experienced during the last few years. So long as voluntary effort on the part of the community was able to cope with the requirements of the sick poor, there was much less occasion for the medical than for the surgical accommodation, but with the great increase of population during the present century, the medical beds in hospitals have become universally utilised, while in London, and other large towns, large numbers suffering mainly from chronic medical ailments have found a permanent refuge in the sick wards of the workhouses. These, besides being generally overcrowded, were unfitted in many other respects for the reception of patients, and measures, it is well known, have been taken by the Local Government Board during the last ten years to grapple with the increasing evil by the erection of hospitals apart altogether from the workhouses. In London, where the want was most felt, commodious buildings have been opened by the instrumentality of a board appointed jointly by the ratepayers and the Government, into which are received a class of patients differing but little from those ordinarily taken in to the general hospitals. These asylums have been planned on the most approved models of the day, and possess numerous advantages in a domestic point of view over the endowed and subscription hospitals; but, judging from their high standard of mortality, we can readily understand the exceptional position they occupy when contrasted with the tutorial establishments. As an illustration I will take the returns of the Poplar and Stepney sick asylums, as furnished me by Dr. Goldie, the medical superintendent. The hospital was opened in 1871 :—

	Number of Cases.	Number of Deaths.	Mortality per Cent.
1871	903	97	10·7
'72	2,501	292	11·6
'73	2,426	403	16·6
'74	2,320	396	17·0
'75	2,121	413	19·4
'76	1,694	409	23·5

The mean residence of the patients in this asylum is sixty days, and the beds are pretty equally divided among men and women. No distinction is made in the wards betwixt medical and surgical cases, but by far the largest number are of the former character, and to this circumstance we are bound to attribute the excessive mortality. From the fact of the asylum being placed in the east end of London, and in a district which has special claims on the London Hospital, it may be assumed to modify to some extent the death-rate of that institution. Looking at the mortality of the London Hospital for the years prior to and following the opening of the asylum, there seems some foundation for the supposition, and it is very possible that the relief afforded thereby has acted as a continuous check on the increasing mortality of that establishment.

Apart from the urgent requirements of the sick, the influences of teaching and the organisation of special hospitals, there is no department of this subject which brings into greater relief the contrast betwixt the past and present history of hospitals, as that which relates to the measures which have been taken from time to time to improve their sanitary condition. It is needless to recapitulate the defects so frequently complained of as characteristic of numerous hospitals of a past age. We can see now that it was mainly when exceptional circumstances occurred through epidemic outbreaks and rapid increase of a poor population that occasional overcrowding occurred, and that the result was an increased rate of mortality. The first step which prudence would suggest as a remedy would consist not only in a limitation of the numbers usually received into the hospital, but in the provision by which every patient should possess an adequate amount of space that could not be encroached upon under any circumstances. Of equal importance to individual cubic space came the question of ventilation, or how the air in a given area should undergo continuous changes from the outside atmosphere in a manner not incompatible with the comfort and well-being of the patient. When these points were conceded, next came the problem, how they could best be carried out in the old hospitals as well as in those more recently built. It was a comparatively easy matter to determine the first, but the second, which was necessarily incorporated with it, has been a fruitful source of trouble and anxiety to every one experienced in hospital hygiene. A reference to the numerous plans of hospitals figured and described in the Sixth Report of the Medical Officer of the Privy Council, will explain how the difficulties which encompass the subject depend more on the original construction of the buildings used for the sick than from any other defined cause. It has been found, and more frequently is it the case in small hospitals, constructed very possibly for other pur-

poses, and on a plan not dissimilar to ordinary dwelling houses, that the transit of air in the inhabited apartment is seriously impeded, if not rendered nugatory, by faults of window construction, especially when these are limited to one aspect. In addition to restrictions on a free supply of air, it has been also shown that prior to the middle of the present century less attention was paid to the trapping of waste water and soil pipes, the flushing of drains, to cleanliness, and in fact to all questions of sanitary importance than is now thought necessary, and instances can be adduced from the experience of nearly every hospital, testifying to outbreaks of septic maladies from one or other of these causes. The whole subject of hospital hygiène engaged so much attention in connection with the faulty accommodation for our sick and wounded soldiers, that a Government Commission was appointed in 1857 to consider its entire bearings, and the result was a report containing numerous recommendations in favour of establishing that principle in hospital construction by which the atmosphere could get ready access to the wards from all available points of the compass.* The recommendations were supported by high authority, and since the period in question there has been a general disposition in the construction of all new hospitals of any size, to follow the plans approved by the commission. These consisted in the formation of a series of oblong blocks placed at right angles to a corridor communicating with each block, the best examples of which are to be seen in the Herbert Hospital on Woolwich Common, and in the new St. Thomas's Hospital. The wards of these and numerous other buildings constructed on similar principles, are liberally supplied with windows on both sides, as well as at the ends opposite the doorways; and the beds, alternating with the windows, are always limited to two rows within the outside walls. To the arrangement thus indicated, and which had been borrowed from France and Belgium, the term pavilion has been applied, and while little exception can be taken to it on sanitary grounds, there is some reason to fear from the avidity with which it has been taken up by local as well as by governmental authorities, that it runs a risk of being over estimated, at the expense of other and possibly better arrangements. The fact that the principle sprung from the wants of the army medical service with its cumbrous administrative machinery, and for a class of patients whose diseases were altogether different in the bulk from those met with in civil hospitals, had, no doubt, a main share in giving the system a preference to others, in which the facilities for always obtaining fresh currents of air were less. These currents, though harmless and even salutary, are not always

* Report of the Commissioners for improving the Sanitary Condition of Barracks and Hospitals, 1863.

agreeable even to persons in fair health, and they are known to be positively hurtful to patients suffering from chest and nervous diseases, and in truth, to the great bulk of what we are accustomed to call medical cases. On the other hand, the artificial heat which in public hospitals is often found necessary to supplement or to take the place of the ordinary fire-place, is frequently injurious to surgical patients, and, though it may be necessary under certain circumstances, systems of warming are extremely difficult of application in buildings constructed on the pavilion principle. It seems now almost essential that in every public hospital both objects should be fulfilled, and this cannot be accomplished by a rigid adherence to one undeviating principle. In the one case the aim is to obtain freedom of air by a judicious arrangement of windows, so that they may be opened partially or wholly without direct drafts on the beds, and the other, to secure it by the same means, plus one or other of the appliances which modern ingenuity has suggested to render it more agreeable to the patients. In our capricious climate, and especially in cold weather, the very best measures yet introduced to supplement the common fire-place have been found to be comparative failures, and the bulk of the inventions intended for the admission and extraction of vitiated air are, in their action, extremely unsatisfactory. Indeed, in many cases they have been found to be positively injurious, from the fact of the flues, channels, and valves through which either fresh or foul air are conducted, becoming harbours for dust, dirt, or noxious emanations, which it is usually impossible to eradicate, on account of their narrow and tortuous courses. The truth is that the problem for obtaining an agreeable and equable temperature in all weathers, though it may appear a comparatively simple one to the engineer and architect, is really most complex when applied to the practical requirements of a sick ward. The cause of this is simple enough, for apart from the novel fact of the patients having to occupy the same apartment day and night, the incoming air is always liable to be over- or under-heated, deprived of its moisture or contaminated with impurities derived from underground communications or from other channels through which it may have to pass. To mitigate the latter evil, recent experience gives a preference to the direct admission of the external atmosphere to the wards by grated openings in the outside walls, whence it passes over steam or hot water pipes placed in immediate apposition, and probably this principle, as auxiliary to the fire-place, is the best that can be adopted. Then the question of the escape of the vitiated air is another which has equally perplexed the ingenuity of scientific men, especially where, as in numerous special hospitals, the free opening of windows is impracticable. It would be foreign to the subject of this essay to

recapitulate the numerous contrivances having in view this object, but we know from experience that the natural temperature of respired—which must also be vitiated—air will cause it to ascend, and that its ascension may be hastened by any process of rarefaction or extraction applied to aid it. Hence in many new and in some old hospitals, it is common to meet with openings in the ceilings communicating either directly with the chimney flues or with chambers made purposely surrounding them, through which, it is generally hoped, currents may be established upwards through the roof. This simple process of aspiration is far less costly and less liable to untoward results than the most elaborate plans employed in some English and in numerous foreign hospitals; but neither are altogether satisfactory, and preference is now usually given, and with reason, to the old empirical process of carrying windows to within a few inches of the ceiling, by which means they serve the double purpose of admitting fresh air at a high level or of emitting foul air which may have risen to the same stratum. It is obvious that in matters of engineering skill we certainly have the advantage of our forefathers, though in hospital mortality we are not in a position to point out better results. It is but reasonable, however, to infer, from the attention which has been universally paid for many years to the twin subjects of warming and ventilation, and to the stringent regulations in force with regard to them in all public hospitals, that a more comfortable and healthy condition of atmosphere is ensured, and one which is better adapted in every way for the successful treatment of disease.

Apart from the means, natural or mechanical, employed to secure a sufficient supply of air for hospital purposes, it is relevant to the subject here to refer to recent attempts which have been made to deprive the hospital atmosphere, by chemical means, of those subtle and deleterious organisms which rightly or wrongly are assumed to have a powerful influence in spreading infection. The subject is naturally involved in considerable mystery, but it contains so much of real value in connection with preventive medicine, and has hitherto been so successful in its results, that there can be no doubt of its being prosecuted with advantage further. The oxidising and purifying properties of numerous earthy salts and mineral sulphates had been long known and in use in hospitals before the more ambitious title of disinfectants came into general use. Their employment was encouraged as much for the destruction of foul smells as for any occult virtue they were supposed to possess in destroying infection; but as the knowledge of the properties of numerous antiseptic agents advanced, greater facilities were given to their employment, which is now strenuously enforced in hospitals, and

indeed in all public places where there is reason to apprehend danger from noxious exhalations. The hopelessness of attempting to disinfect an inhabited apartment, unless indeed the atmosphere in it is made irrespirable, is a condition usually recognised, and has received confirmation from recent experiments, but apart from such desideratum, there are plenty of ways in which disinfectants may be and are advantageously employed in hospital practice. In the washing of foul and contaminated linen, in the rinsing of bedpans and chamber utensils, and of all vessels in constant use by patients suffering from typhoid and analogous distempers, even in vigilantly attending to their uses, the *employés* are kept alive to the risks which continually beset them in the course of their duties. The results of their ordinary employment on the hospital health must, however, be of an entirely negative character. But there is another aspect of the question, which gives reason to hope that the influence of antiseptics may be more satisfactorily determined. A conviction that the atmospheric impurities which interfered with the healthy action of wounds and induced the nosocomial distempers previously referred to was due to organised germs or ferments, led an eminent surgeon to originate a plan of treatment by which wounds undergoing the reparatory process should on no account be brought into immediate contact with the air until the latter was thoroughly washed and deprived of every noxious element.* This system of dressing wounds, to which the term antiseptic is applied, involves a large amount of care, patience, and personal attention on the part of the manipulator, and the increased cost of the material employed is an objection which may possibly weigh against it in the minds of hospital committees. For all that, the antiseptic process has been gaining ground, both in this country and abroad, as exceptionally well adapted for hospital purposes. Mr. Lister claims from its sedulous employment the almost complete, if not entire, banishment of gangrene and pyæmia from his hospital wards, and similar experience of its utility may be had from numerous establishments where the system has been judiciously practised. In several of the surgical wards of Guy's Hospital, erysipelas attacking wounds which have been diligently protected by this method is now unknown, and cases of pyæmia after surgical operation are very rare. In the last report of the Seamen's Hospital it is stated on official authority that the deaths from pyæmia have diminished to less than half of what they were prior to the introduction of antiseptic dressings, "notwithstanding the presence of numerous "foul ulcers and open wounds." Similar experience could be obtained from other sources showing that in the topical application of

* "The Lancet," September, 1867. "Transactions of Royal Society, Edinburgh," 1875, Professor Lister.

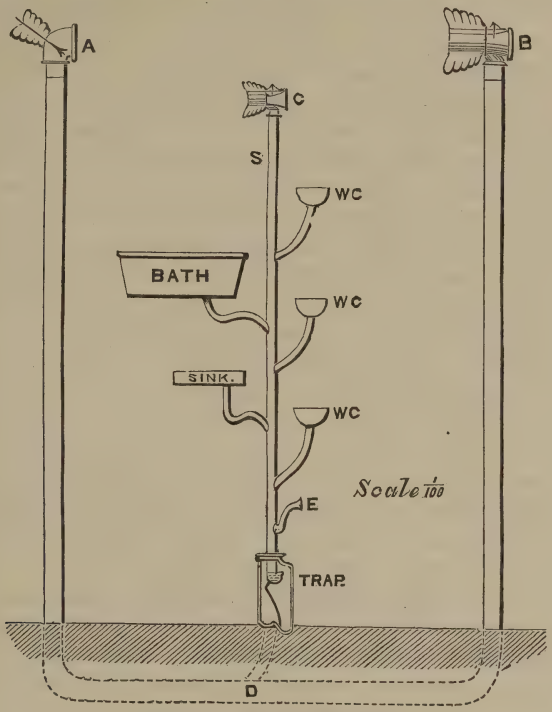
antiseptics we have the means which, if industriously employed, will go far to mitigate the prevalence of nosocomial distempers, and may possibly, when our knowledge of the subject is more matured, and less cumbrous arrangements take the place of those now in use, assist in solving the problem, how to render the hospital atmosphere as healthy as that which exists outside.

In connection with the past and present measures employed to aid in the hygiène of hospitals, or in other words, to reduce their mortality, we have still to consider several important departments to which much attention has been paid in recent years. These comprise the arrangements for drainage, and for dieting and nursing the sick, to which we may add cleanliness, although it may follow as a corollary to the others. There is little doubt, that the introduction during the last half of the eighteenth century of water-closets into private dwellings and public institutions, though an immense advance as regards cleanliness and comfort on the old system of open latrines, has at the same time given rise to some of the greatest difficulties with which the modern hospital has to contend. These owe their origin to the escape of sewer gases from drains and cesspools in immediate communication with, or in rooms adjoining the wards, where they are proved to be detrimental alike to the sick and the healthy. In all the old hospitals, and indeed in the majority of those built during the present century, the main sewer, as well as the numerous minor conduits into which the waste water as well as the sewage of the hospital are allowed to fall, were made to pass underneath the structure itself. Formerly, and until a comparatively recent period, these were made of brickwork, and in course of time became subject to leakage, less perhaps from natural decay, than from accumulated obstructions, aided by the incessant incursions of rats. The neighbouring ground becoming in consequence saturated with sewage, the effluvia from the same insidiously escaped from the basement, and was soon discerned in passages and staircases, and has often been found to permeate the sleeping apartments. The remedy in such cases would appear to be simple enough, but in the vast majority of instances, it is seriously compromised by the ignorance which prevails as to the position and curves of the drains, of which it is usually impossible to discover any accurate plans. But a more frequent cause of evil from sewage gas arose, as in fact it does still, from the faulty trapping of soil and waste water pipes either underground, or in proximate communication with the habitable parts of the building. The first objection has been remedied in most of the old hospitals by the substitution of glazed earthenware pipes for the brick or barrel drains, placed, where possible, outside the walls, and at such a gradient as to ensure a rapid current, while the latter has been found much more

difficult to deal with. The various sanitary appliances introduced for preventing the reflux of foul air through soil pipes and other direct channels of communication, have been attended with more or less success, but it is universally felt that in certain meteorological conditions the traps and valves in common use are not proof against the subtle invasion of the noxious element. In the best devised valve closet now in general use in hospitals and government buildings, the inventor (Jennings) has thought fit to supplement the ordinary action by an apparatus by which a small portion of antiseptic fluid may be thrown into the basin each time it is used, in order to avoid the danger referred to; but it is clear that mechanical devices of this nature involve constant supervision, and are out of place in an hospital. The remedy lies in an efficient ventilation of the soil as well as of the drain pipes, and until such is effected we have no absolute security against the reflux of sewer gas. An approach to this desideratum has been made both in private houses and in public institutions, by permitting the escape of pent up sewer gas in soil pipes through a half-inch tube, in immediate connection with the soil pipe, and having its open extremity communicating with the external atmosphere high above the roof. A more perfect system than this to include drains and sewers alike, has been carried out in one of the ancient quadrangles of Guy's Hospital, which gives reason to hope that the difficulties so frequently referred to may be satisfactorily overcome. This method, which is best known by the name of the inventor, Mr. Banner, has been frequently discussed in the art and science journals, and consists essentially in the establishment of a continuous atmospheric current through the soil pipe, independent of another through the drain. In the former case this is effected by a short inlet pipe communicating directly with the fresh air near its base, while its upper extremity extending above the roof is surmounted with a foul-air withdrawing cowl; and in the case of the drain or sewer, if its course is in immediate contiguity with the building, a current throughout its entire length may be established by vertical shafts on the old plenum and vacuum principle recommended by Reid and Peclet. How this has been effected at Guy's Hospital may be judged of from the accompanying sketch, which is intended to show how each soil pipe has been dealt with, as well as the accompanying drain, which in this instance runs parallel with the side of the hospital with an incline from each extremity.

No exception has been taken to the new arrangements, which appear to act well in all weathers, in foggy days as well as in high winds, when sewers and soil pipes are most liable to be filled with sewer gases. The system also does away with what has hitherto been a necessity, namely syphon traps and elaborate machinery in

connection with waste water and cistern supply as well as with the closets themselves. It is very likely that in the pre-sanitary



A —Inlet to admission air shaft to drain.
B—Outlet to extraction shaft from drain.
D—Drain.
C—Outlet for air from soil pipe.
E—Inlet for fresh air to soil pipe.
S—Soil pipe.

age, when the effects of sewer gases were less understood, the true causes of occasional outbreaks of numerous local distempers among hospital patients may have escaped detection, but we are now more accustomed to attribute unhealthy conditions to this source than to any other. There is every reason to presume that we are right in doing so, and there cannot be a doubt about the necessity of using every precaution in our power to avert them.

Almost equal in importance to a continuous supply of fresh air is the question of dieting the sick. This subject did not form so conspicuous a part in the administrative rule of the old hospitals as it does at the present day. It was scarcely to be expected at a time when all manner of acute diseases demanded a starving regimen, that much attention could be paid to varieties in the diet roll, but during the last thirty or forty years a well-arranged

dietary has been regarded by the physician as perhaps the chief instrument wherewith he can cope successfully with curable or palliate incurable disease. It scarcely admits of doubt that the greater attention which has been paid to this subject, to the building up of wasted tissue, and to the special alimentary requirements of diseases, the characters of which were not formerly understood, must have exercised very considerable influence in diminishing mortality. That some important regulations regarding diet existed in the oldest hospitals at a very early date, we have already seen, as time advanced alterations and more variety were introduced to accommodate the scale to the changing customs of the nation, but it was not till nearly the middle of the present century that special attention was devoted to numerous minor though important details of dieting arrangements. These comprised not only suitable scales for patients suffering from various conditions of disease, but extended, to allow of variety to the manner, in which the food was prepared and served to the patients. In the best arranged hospitals, instead of the old-fashioned daily supply of boiled beef, with or without potatoes, we have the meat roasted and boiled alternately; while in critical and special cases, which generally form from 20 to 30 per cent. of the inmates, various articles to which by common consent the term extras has been applied, have been universally employed to tempt the sickly appetite. In addition to these the general introduction of aërated waters, fresh vegetables, tea, cocoa, and coffee in the diet scale, have done much to promote the comfort of the patients, while the various methods of concentrating food so as to allow of the largest amount of nourishment in the smallest possible bulk, are continually receiving fresh impulses. The principle of supporting nature in her efforts to ward off disease as well as in assisting the vital powers to surmount attacks by means of a well-arranged dietary, is one which is now universally acknowledged, and its influence has been felt more strikingly in the case of hospital patients than among any other class of the community.

In contrasting the present with the past history of hospitals, there is no department which has been so fruitful of commendation as that which relates to the improved condition of those charged with the more immediate care of the sick. It is well known that a considerable advance has been made in nearly all hospitals in this branch of the service, but it is doubtful whether in the discussion of the question we have not been too apt to lose sight of the inglorious labours of the workwomen of the past. That deaths may have occurred in hospitals from carelessness, apathy, or ignorance on the part of the nurse is beyond question, that they have arisen from neglect, foolhardiness, or officious

meddling on the part of the medical superior is equally probable, but considering the dependent position of the former, her failures were less to be reprobated than the shortcomings of those to whose administrative authority the interests of each separate establishment were relegated. If nursing is to usurp or to be allowed a licence at all in keeping with the responsibility which is often sought to be associated with it, no amount of intelligence, training, and technical instruction, can be considered too great for the guidance of those entrusted with the work, and human nature in the end must be the gainer. But if, on the other hand, it is simply employed as a subordinate means of carrying out the directions of a medical superior, there is barely room for the display of critical knowledge, and it is this condition of the art which has met with most favour of late years in public hospitals as well as in private life. The supply of female labour in this country has always harmonised with the demand for it, and there has been no lack of obtaining nurses of respectability for hospital purposes, provided inducements equal to those offered in other spheres of life are held out to them. The improved conditions of the present day consist in the vastly reduced amount of work expected from the nurse, in her domestic position being rendered more comfortable and remunerative; and to ensure her being fitted for her duties she has to undergo a period of probation and training more or less protracted. These changes have been effected in hospitals contemporaneous with a general improvement in the demand for female labour, especially in the department from which all authorities agree the best class of nurse is derived, that of domestic service. It was no doubt from the same source that the female hospital staff were formerly recruited, but "Omnia mutantur nihil interit." The truth is we have learnt so much to depreciate the efforts of our progenitors in these and kindred matters, that we are disposed to forget that modern knowledge is simply the outcome of previous experience, and that the social habits of the people become incorporated with each epoch of hospital history. Much benefit, however, may be expected to accrue from the application of this knowledge to the immediate wants of the sick, especially as regards the efficiency of those to whose domestic care they are entrusted, and though experience shows that what is termed high class nursing is necessarily associated with greatly increased cost, yet the advantages are held to be reciprocal, and the public, who may be supposed to be the best judges of what concerns their interest, have unanimously endorsed the principle.

If doubts have been expressed regarding the efficacy of some modern means employed for the improvement of the hospital health, it is impossible that any one can take exception to the important

domestic virtue of cleanliness, whether in its personal application to the patients, or embracing in its wider sense their numerous surroundings. Vigilant attention to this subject is unquestionably of modern growth, notwithstanding the numerous references made to the necessity for it by Howard and other writers in their time. It involved a principle which was slow to take root, because its opposite extreme was closely interwoven with the habits of both patients and attendants, and it was long before the fact was universally recognised that unless cleanliness was enforced in every department, the best constructed hospitals might readily become pest houses, and the best medical and surgical skill comparatively useless. It has been remarked by a great authority, that a hospital is an establishment "which never rests from fouling itself, nor are there any "products of its foulness which ought not to be regarded as "poisonous."* The principle of cleanliness cannot be too strongly inculcated as among the most essential elements of hospital success, and among the best arranged hospitals of the present day suitable provision is made to secure it by every available means. Lavatories have been introduced for the purposes of daily ablution, and bath-rooms are now pretty generally considered as part of the necessary equipment of every ward, although it is to be feared that they are not so generally utilised as they ought to be. Equal facilities are allowed for renewing bedding and bed-linen, and for the cleansing of ward furniture generally; while the employment of agents of a purifying and disinfecting nature go far to remove the dangers to be apprehended from infection, vermin, or fomites. It is, or ought to be the special province of every ward superior to see that these, together with many other homely details of domestic management, are efficiently carried out, for they form the basis of all hospital hygiène. If vigilantly enforced they cannot fail to mitigate many objections inseparable from a system which, however great its advantages may be to the labouring community, has certain evil influences associated with it tending to mar its usefulness. What are usually supposed to be graver matters may be safely left to the architect, the engineer, and especially to those to whose medical and surgical skill the care of the sick is more immediately entrusted, but their joint efforts will avail little unless they are unceasingly accompanied with a watchful regard for the most scrupulous cleanliness.

* Mr. Simon.

APPENDIX.

I.—*The Main Causes of Death in Guy's Hospital, at Various Intervals during the Last, and beginning of the Present, Centuries.*

Year.	Total Deaths.	Fever.	Small Pox.	Chest Affection.	Dropsies	Injuries.	Mortification.	Syphilis.	Other Causes.
1732	269	24	6	98	47	5	10	11	68
'34	257	24	6	90	55	5	19	6	52
'35	258	14	13	71	58	2	12	10	78
'36	264	30	7	75	48	4	12	11	77
'37	258	52	11	77	41	7	5	13	52
'41	322	83	3	86	44	6	6	9	85
'42	355	71	8	100	56	3	4	12	101
'43	306	54	12	104	37	—	7	18	74
'44	288	41	8	110	52	4	10	13	50
'45	289	61	14	106	34	3	4	5	62
Proportion per cent. to general deaths ...	—	15·9	3·1	31·9	16·6	1·3	3·1	3·8	24·3
1770	223	26	5	53	51	3	21	7	57
'71	247	43	2	58	46	2	36	2	58
'72	233	50	1	59	49	2	26	7	39
'73	233	59	—	45	31	4	34	8	52
'74	184	26	12	57	34	2	19	3	31
'75	234	25	—	80	43	3	16	5	62
'76	209	37	5	60	30	2	20	3	52
'77	222	41	3	83	40	2	15	6	32
'78	225	31	—	66	38	4	16	8	62
'79	250	30	2	80	42	3	24	5	64
Proportion per cent. to general deaths ...	—	16·3	1·3	28·3	17·8	1·2	10·2	2·4	22·5
1800	360	68	—	129	46	11	23	1	82
'01	284	75	—	86	46	8	22	—	47
'02	341	63	—	107	47	20	28	—	76
'03	309	42	—	114	44	19	22	—	68
'04	325	27	—	119	57	21	19	1	81
'05	294	36	—	99	45	13	21	2	78
'06	270	25	1	97	44	8	24	2	69
'07	303	16	—	91	51	17	34	—	94
'08	290	16	—	86	43	16	20	3	106
'09	322	29	—	89	37	24	25	2	116
Proportion per cent. to general deaths ...	—	12·8	—	32·9	14·8	5·1	7·7	0·3	26·4

II.—*The Main Causes of Deaths in Guy's Hospital from* 1854-72.

Years.	Total Deaths.	Fevers.	Nervous System.	Respiratory Organs.	Organs of Circulation.	Organs of Digestion.	Genito-Urinary Organs.	Injuries.	Other Causes.
1854-60 inclusive....	2,978	91	182	813	311	431	367	483	300
Percentage mortality to general deaths.....	—	3·0	6·1	27·3	10·5	14·5	12·3	16·2	10·1
1861.....	458	12	28	143	40	50	55	78	52
'62.....	468	24	36	107	53	52	59	73	45
'63.....	486	11	36	96	58	61	73	100	51
'64.....	480	11	39	108	45	67	62	109	39
'65.....	488	11	26	100	55	64	67	102	63
'66.....	534	11	32	121	81	58	69	97	65
'67.....	509	12	36	131	46	68	73	101	42
'68.....	466	10	23	96	76	59	56	83	63
'69.....	496	13	23	119	74	60	72	76	59
'70.....	498	10	23	88	49	60	87	91	90
'71.....	555	5	27	130	63	67	83	85	95
'72.....	471	6	22	110	66	66	69	66	66
Percentage mortality to general deaths.....	—	2·3	6·0	22·8	11·9	12·4	14·0	18·0	12·6

III.—*Mortality in Guy's Hospital from* 1814 *till* 1876, *distinguishing Medical from Surgical Cases.*

Year.	Medical Cases.			Surgical Cases.			Total.
	Discharged.	Died.	Mortality per Cent.	Discharged.	Died.	Mortality per Cent.	Mortality per Cent.
1814	778	157		1,629	73		
'15	802	187		1,556	85		
'16	745	167		1,664	78		
'17	827	163	17·34	1,662	81	4·75	9·4
'18	781	168		1,522	84		
'19	857	175		1,573	78		
1820	782	162		1,602	93		
'21	857	177		1,666	72		
'22	791	159		1,794	99		
'23	745	176		1,729	84		
'24	—	—	16·87	—	—	6·16	9·9
'25	798	157		1,482	107		
'26	857	173		1,514	124		
'27	834	148		1,658	134		
'28	721	143		1,549	103		
'29	787	161		1,510	136		
1830	901	157		1,396	149		
'31	1,163	207		1,771	138		
'32	1,115	179		1,641	108		
'33	1,204	161		1,621	109		
'34	1,290	175	13·81	1,805	125	6·93	9·8
'35	1,245	203		1,740	118		
'36	1,238	195		1,923	111		
'37	1,307	230		1,750	156		
'38	1,297	191		1,769	118		
'39	1,022	190		1,666	141		
1840	1,352	190		1,977	127		
'41	1,224	199		1,843	136		
'42	1,519	209		1,908	121		
'43	1,529	239		1,990	152		
'44	1,401	236		2,012	158		
'45	1,420	215	13·73	1,933	126	6·50	9·7
'46	1,449	260		1,931	149		
'47	1,521	240		2,139	144		
'48	1,426	246		1,971	129		
'49	1,493	249		1,956	126		

III.—*Mortality in Guy's Hospital from* 1814 *till* 1876, *distinguishing Medical from Surgical Cases—Contd.*

Year.	Medical Cases.			Surgical Cases.			Total Mortality per Cent.
	Discharged.	Died.	Mortality per Cent.	Discharged.	Died.	Mortality per Cent.	
1850	1,712	227		2,160	122		
'51	1,742	282		2,367	135		
'52	1,623	224		1,957	118		
'53	—	—		—	—		
'54	1,809	369		2,300	157		
'55	1,608	248	13·66	2,290	156	5·31	9·1
'56	1,740	271		2,477	133		
'57	1,890	278		2,461	100		
'58	1,819	288		2,479	142		
'59	1,688	288		2,566	128		
1860	1,728	272		2,487	148		
'61	1,834	303		2 585	155		
'62	1,723	292		2,678	176		
'63	1,566	293		2,929	193		
'64	1,652	290		2,870	190		
'65	1,610	297	15·73	3,116	191	5·94	9·9
'66	1,617	355		2,866	179		
'67	1,507	332		2,763	177		
'68	1,539	290		2,776	176		
'69	1,584	332		2,615	164		
1870	1,476	303		2,650	195		
'71	1,632	352		2,825	203		
'72	1,776	308		3,050	163		
'73	1,756	326	16·51	2,738	198	6·56	10·6
'74	1,872	377		2,741	217		
'75	1,902	362		2,823	198		
'76	1,781	385		2,829	208		

IV.—*Number of Patients Annually Discharged and Dead in Guy's Hospital since the Commencement of the Institution in* 1725, *with the Average Percentage Mortality for each Decennium.*

Year.	Total.	Discharged.	Died.	Mortality per Cent.	Year.	Total.	Discharged.	Died.	Mortality per Cent.
1725*	—	—	83		1766....	1,900	1,692	208	
'26....	—	—	139		'67....	1,847	1,641	206	
'27....	1,080	923	157	14·4	'68....	1,858	1,648	210	11·1
'28...	1,480	1,276	204		'69....	1,985	1,771	214	
'29....	1,846	1,572	274						
					1770...	2,076	1,853	223	
1730....	1,728	1,514	214		'71....	2,155	1,908	247	
'31....	1,716	1,506	210		'72....	2,230	1,997	233	
'32....	1,737	1,468	269		'73....	2,156	1,923	233	
'33....	1,939	1,683	256		'74....	2,194	2,010	184	
'34....	1,781	1,524	257		'75....	2,247	2,013	234	10·2
'35....	1,889	1,631	258	13·8	'76....	2,239	2,030	209	
'36....	2,007	1,743	264		'77....	2,350	2,128	222	
'37....	1,760	1,502	258		'78....	2,412	2,187	225	
'38....	1,798	1,548	250		'79....	2,064	1,814	250	
'39..	1,745	1,468	277						
					1780....	2,405	2,129	276	
1740....	1,895	1,587	308		'81....	2,320	2,077	243	
'41....	2,203	1,881	322		'82....	2,226	1,994	232	
'42....	2,194	1,839	355		'83....	2,141	1,901	240	
'43....	2,114	1,808	306		'84....	2,158	1,938	220	
'44....	2,002	1,714	288		'85....	2,539	2,335	204	10·4
'45....	1,892	1,603	289	14·8	'86....	2,152	1,919	233	
'46....	1,923	1,633	290		'87....	1,965	1,717	248	
'47....	2,135	1,820	315		'88....	2,090	1,854	236	
'48....	2,081	1,802	279		'89....	2,469	2,256	213	
'49....	2,057	1,766	291						
					1790....	2,243	2,021	222	
1750....	1,980	1,685	295		'91....	2,037	1,815	222	
'51....	1,890	1,639	251		'92....	2,166	1,891	275	
'52....	1,847	1,607	240		'93...	2,345	2,047	298	
'53....	1,948	1,693	255		'94....	2,184	1,915	269	
'54...	1,951	1,693	258		'95...	2,376	2,114	262	10·2
'55....	1,873	1,607	266	12·6	'96...	2,466	2,209	257	
'56....	1,936	1,706	230		'97....	2,574	2,321	253	
'57....	1,823	1,603	220		'98....	2,702	2,398	304	
'58....	1,749	1,588	161		'99...	2,642	2,328	314	
'59....	1,841	1,637	204						
					1800....	2,770	2,410	360	
1760....	1,845	1,672	173		'01....	2,653	2,369	284	
'61....	1,875	1,669	206		'02....	2,774	2,433	341	
'62....	1,907	1,673	234		'03....	2,680	2,371	309	
'63....	1,911	1,698	213		'04....	2,482	2,157	325	
'64....	1,667	1,469	198		'05....	2,666	2,372	294	
'65....	1,881	1,657	224		'06....	2,505	2,235	270	

* From the decayed condition of the first registration book, it has been found impossible to calculate the numbers during the first two years of the series.

IV.—*Patients Annually Discharged and Dead in Guy's Hospital—Contd.*

Year.	Total.	Discharged.	Died.	Mortality per Cent.	Year.	Total.	Discharged.	Died.	Mortality per Cent.
1807....	2,856	2,553	303		1840....	3,646	3,329	317	
'08....	2,646	2,356	290	11·6	'41....	3,402	3,067	335	
'09....	2,635	2,313	322		'42....	3,694	3,353	341	
					'43....	3,757	3,427	330	
					'44....	3,911	3,519	392	9·7
					'45....	3,807	3,413	394	
					'46....	3,789	3,380	409	
1810....	2,669	2,384	285		'47....	4,049	3,660	389	
'11....	2,802	2,508	294		'48....	3,772	3,397	375	
'12....	2,636	2,361	275		'49....	3,824	3,449	375	
'13....	2,658	2,368	290						
'14....	2,637	2,407	230	9·9					
'15....	2,630	2,358	272		1850....	4,221	3,872	349	
'16....	2,654	2,409	245		'51....	4,526	4,109	417	
'17....	2,733	2,489	244		'52....	3,876	3,580	342	
'18....	2,555	2,303	252		'53....	3,265	2,961	304	
'19....	2,685	2,430	255		'54*	4,635	4,109	526	9·1
					'55....	4,302	3,898	404	
					'56....	4,621	4,217	404	
					'57....	4,729	4,351	378	
1820....	2,639	2,384	255		'58....	4,728	4,298	430	
'21....	2,772	2,523	249		'59....	4,670	4,254	416	
'22....	2,843	2,585	258						
'23....	2,734	2,474	260						
'24....	2,508	2,261	247	9·9	1860....	4,635	4,215	420	
'25....	2,544	2,280	264		'61....	4,877	4,419	458	
'26....	2,668	2,371	297		'62....	4,869	4,401	468	
'27....	2,774	2,492	282		'63....	4,981	4,495	486	
'28....	2,516	2,270	246		'64....	5,002	4,522	480	9·7
'29....	2,585	2,288	297		'65....	5,214	4,726	488	
					'66....	5,017	4,483	534	
					'67....	4,779	4,270	509	
					'68....	5,078	4,612	466	
1830....	2,603	2,297	306		'69....	4,695	4,199	496	
'31....	3,279	2,934	345						
'32....	3,043	2,756	287						
'33....	3,095	2,825	270		1870....	4,624	4,126	498	
'34*	3,395	3,095	300	9·8	'71....	5,012	4,457	555	
'35....	3,306	2,985	321		'72....	5,297	4,826	471	
'36....	3,470	3,161	309		'73....	5,018	4,494	524	10·6
'37....	3,443	3,057	386		'74....	5,207	4,613	594	
'38....	3,375	3,066	309		'75....	5,285	4,725	560	
'39....	3,019	2,688	331		'76....	5,203	4,610	593	

* New wards opened.

Note.—For Table V see p. 249.

VI.—*Relative Mortality of the Sexes in Guy's Hospital from the Year* 1854 *till* 1876, *distinguishing Medical from Surgical Cases.*

Year.	Mortality among Males.							
	Medical Cases.				Surgical Cases.			
	Dis-charged.	Died.	Mortality.	Total Mortality.	Dis-charged.	Died.	Mortality.	Total Mortality.
1854....	1,007	221	17·9		1,491	118	7·3	
'55....	841	164	16·3		1,430	99	6·5	
'56....	953	184	16·1		1,525	93	5·7	
'57....	1,050	166	13·6	15·78	1,458	65	4·3	5·94
'58....	1,041	168	13·8		1,482	110	6·9	
'59....	923	187	16·8		1,560	80	4·9	
1860....	914	178	16·2		1,475	106	6·7	
'61....	968	189	16·3		1,576	108	6·4	
'62....	915	171	15·2		1,618	115	6·6	
'63....	810	187	18·7		1,835	135	6·8	
'64....	825	180	17·9		1,862	136	6·8	
'65....	827	204	19·7	18·61	2,120	136	6·0	6·57
'66....	832	223	21·3		1,812	136	6·9	
'67....	773	199	20·4		1,790	119	6·2	
'68....	752	191	20·5		1,784	132	6·8	
'69....	816	207	20·0		1,705	113	6·2	
1870....	780	196	20·0		1,706	141	7·6	
'71....	827	214	20·5		1,829	158	7·9	
'72....	845	179	17·4		1,904	119	5·8	
'73....	854	190	18·1	19·66	1,682	137	7·5	7·50
'74....	909	227	19·9		1,662	155	8·5	
'75....	908	234	20·4		1,772	145	7·5	
'76....	858	224	20·6		1,786	146	7·5	

VI.—*Relative Mortality of the Sexes in Guy's Hospital—Contd.*

Year.	Mortality among Females.							
	Medical Cases.				Surgical Cases.			
	Discharged.	Died.	Mortality.	Total Mortality.	Discharged.	Died.	Mortality.	Total Mortality.
1854....	802	148	15·5		809	39	4·6	
'55....	767	84	9·8		860	57	6·2	
'56....	787	87	9·9		952	40	4·0	
'57....	840	112	11·7	12·11	1,003	35	3·3	4·26
'58....	778	120	13·3		997	32	3·1	
'59....	757	101	11·7		1,014	48	4·5	
1860....	814	94	10·4		1,012	42	4·0	
'61....	866	114	11·6		1,009	47	4·4	
'62....	808	121	13·0		1,060	61	5·4	
'63....	756	106	12·2		1,094	58	5·0	
'64....	827	110	10·7		1,008	54	5·0	
'65....	783	93	10·6	12·46	996	55	5·2	4·83
'66....	785	132	14·3		1,054	43	3·9	
'67....	734	133	15·3		973	58	5·6	
'68....	787	99	11·2		992	44	4·4	
'69....	758	125	14·2		910	51	5·3	
1870....	696	107	18·3		944	54	5·4	
'71....	805	138	14·6		996	45	4·3	
'72....	931	129	12·1		1,146	44	3·7	
'73....	902	136	13·1	12·96	1,056	61	5·4	4·84
'74....	963	150	13·4		1,079	62	5·4	
'75....	994	128	11·4		1,051	53	4·8	
'76....	923	161	14·8		1,043	62	5·6	

VII.—*Patients Discharged and Dead in Guy's Hospital since the Commencement of the Institution to the Present Time, Arranged in Decennial Periods.*

	Discharged.	Died.	Mortality per Cent.
1725 to 1731	5,285	849	13·8
'31 „ '41	15,660	2,607	14·2
'41 „ '51	17,551	3,030	14·7
'51 „ '61	16,445	2,258	12·0
'61 „ '71	16,771	2,136	11·2
'71 „ '81	20,139	2,313	10·3
'81 „ '91	20,012	2,291	10·2
'91 „ 1801	21,448	2,814	11·5
1801 „ '11	23,543	3,023	11·3
'11 „ '21	24,017	2,612	9·8
'21 „ '31	23,841	2,706	10·1
'31 „ '41	29,896	3,175	9·6
'41 „ '51	34,537	3,689	9·6
'51 „ '61	39,992	4,041	9·1
'61 „ '71	44,253	4,883	9·9
'71 „ '77	27,725	3,297	10·6

TABLE V.—*Glasgow Royal Infirmary. Accidents, with Mortality, during Separate Intervals.*

Year.	Cases.	Deaths.	Mortality per Cent.	Year.	Cases.	Deaths.	Mortality per Cent.
1866	958	112		1871	1,057	114	
'67	866	74		'72	1,205	134	
'68	838	74	8·9	'73	1,333	150	11·4
'69	902	79		'74	1,250	149	
'70	1,064	77		'75	1,144	139	

VIII.—*Admissions and Deaths in St. Thomas's Hospital from* 1734 *till* 1790, *with the Death-Rate of each Decade to the Year* 1877.

Year.	Admitted.	Died.	Death-Rate per 100.	Year.	Admitted.	Died.	Death-Rate per 100.
1734.....	2,646	307		1763	3,423	292	
'35.....	3,025	355		'64	3,212	292	
'36.....	2,656	316		'65	3,358	276	
'37.....	2,860	321	11·11	'66	3,101	301	
'38.....	3,027	318		'67	3,357	277	8·88
'39.....	2,747	261		'68	3,352	220	
'40.....	2,593	296		'69	3,369	257	
				'70	2,682	212	
1741.....	3,163	378					
'42.....	2,744	278					
'43.....	2,803	262		1771	3,352	247	
'44.....	2,785	251		'72	3,190	250	
'45.....	2,750	273		'73	3,161	195	
'46.....	2,921	294	9·87	'74	3,276	220	
'47.....	2,778	253		'75	3,236	219	
'48.....	2,723	247		'76	3,175	221	6·71
'49.....	3,033	277		'77	4,461	235	
'50.....	2,721	294		'78	3,171	187	
				'79	3,225	232	
1751.....	2,810	287		'80	3,486	259	
'52.....	3,089	231					
'53.....	2,894	247					
'54.....	3,926	264		1781	4,222	256	
'55.....	3,263	287		'82	3,540	292	
'56.....	3,044	305	8·70	'83	3,258	233	
'57.....	2,990	276		'84	3,190	211	
'58.....	3,151	267		'85	3,436	246	
'59.....	3,040	348		'86	2,926	218	7·12
'60.....	4,000	291		'87	2,977	219	
				'88	3,023	247	
1761.....	3,488	408		'89	3,049	207	
'62.....	3,325	369		'90	2,861	185	

	Death-Rate of each Decade—*Contd.*
1791–1800	7·97
1801–10	6·45
'11–20	6·36
'31–40	8·42
'51–60	7·76
'61–70	11·36
'71–76	12·15

IX.—*Relative Mortality of the Sexes in St. Thomas's Hospital during the Past and Present Centuries.*

Year.	Admissions.		Deaths.		Relative Mortality per Cent.		Total Mortality.
	Males.	Females.	Males.	Females.	Males.	Females.	
1786	2,022	904	161	57			
'87	2,007	970	151	68			
'88	2,073	950	174	73	7·54	6·62	7·25
'89	2,092	957	153	54			
'90	1,977	884	128	57			
1791	1,795	1,108	148	73			
'92	1,882	1,098	155	81			
'93	1,979	1,029	162	89			
'94	1,881	953	177	64			
'95	1,845	955	167	64			
'96	1,868	897	158	72	8·45	6·98	7·97
'97	1,904	870	164	49			
'98	1,849	821	142	68			
'99	2,030	824	164	42			
1800	1,928	870	168	56			
1801	2,148	979	157	56			
'02	2,040	950	133	51			
'03	2,003	927	141	55			
'04	1,939	915	131	61			
'05	1,812	910	118	43			
'06	1,906	965	125	54	6·38	5·65	6·45
'07	1,973	971	140	45			
'08	2,045	941	128	63			
'09	1,884	885	135	45			
'10	1,902	905	136	56			
1811	1,919	881	146	48			
'12	1,964	915	121	43			
'13	1,754	932	132	45			
'14	1,981	964	130	45			
'15	1,980	969	134	44			
'16	2,016	968	125	48	6·88	5·31	6·36
'17	2,048	1,041	127	43			
'18	2,141	1,061	158	75			
'19	2,129	950	155	54			
'20	2,107	1,073	151	74			
1831	2,222	1,205	181	79			
'32	2,068	1,161	156	73			
'33	2,103	1,046	213	71			
'34	2,100	958	171	66			
'35	2,324	1,095	201	82			
'36	2,120	1,197	217	81	9·31	6·73	8·42
'37	2,045	1,226	234	69			
'38	2,110	1,189	214	85			
'39	2,208	1,120	174	70			
'40	2,075	1,121	230	86			

IX.—*Relative Mortality of the Sexes in St. Thomas's Hospital—Contd.*

Year.	Admissions.		Deaths.		Relative Mortality per Cent.		Total Mortality.
	Males.	Females.	Males.	Females.	Males.	Females.	
1851	2,436	1,927	137	101			
'52	2,457	1,828	161	90			
'53	2,555	1,817	250	103			
'54	2,651	1,791	261	140			
'55	2,612	1,839	215	126	8·55	6·64	7·76
'56	2,700	1,852	235	134			
'57	2,675	1,837	248	112			
'58	2,492	1,834	211	142			
'59	2,399	1,691	220	130			
'60	2,406	1,546	233	117			
1861	2,426	1,528	241	139			
'62*	1,432	920	157	75			
'63	1,074	777	113	78			
'64	1,125	759	126	114			
'65	1,158	765	115	81	11·14	10·87	11·36
'66	1,165	779	138	85			
'67	995	676	135	70			
'68	1,121	682	118	89			
'69	951	672	116	75			
'70	900	690	117	91			
1871†	1,088	803	136	82			
'72	1,847	1,380	279	127			
'73	1,582	1,432	220	118	14·00	9·83	12·15
'74	1,752	1,425	248	123			
'75	1,679	1,346	254	155			
'76	1,811	1,414	230	162			

* Removed from London Bridge to Surrey Gardens.

† „ to new hospital on Albert Embankment.

X.—*St. Thomas's Hospital. Medical Mortality during the Past Twenty-Six Years.*

	Medical. Males.			Medical. Females.			Total Medical Mortality.
	Discharged.	Died.	Mortality per Cent.	Discharged.	Died.	Mortality per Cent.	
Old Hospital—							
1850	745	113	13·17	947	69	6·79	9·11
'51	757	83	9·88	970	77	7·35	8·47
'52	776	106	12·01	970	67	6·46	9·01
'53	837	161	16·13	937	73	7·22	11·65
'54	1,034	180	14·82	928	104	10·07	12·64
'55	939	139	12·89	920	90	8·91	10·96
'56	1,004	159	13·67	983	86	8·04	10·97
'57	990	169	14·58	887	79	8·17	11·67
'58	883	136	13·34	825	108	11·57	12·50
'59	918	153	14·28	876	100	10·24	12·35
Average	—	—	13·60	—	—	8·44	—
Surrey Gardens							
1860	908	151	14·25	783	81	9·37	12·06
'61	981	175	15·13	761	89	10·47	13·16
'62	617	100	13·94	490	44	8·23	11·51
'63	394	69	14·90	377	48	11·29	13·17
'64	402	65	13·91	337	72	17·60	15·63
'65	374	59	13·62	369	49	11·72	12·69
'66	374	88	19·04	339	50	12·85	16·21
'67	314	81	20·50	301	30	9·06	15·28
'68	300	71	19·13	300	56	15·73	17·46
'69	289	79	21·46	291	36	11·00	16·54
Average	—	—	15·92	—	—	11·32	—
New Hospital—							
1870	274	68	19·88	293	53	15·31	17·58
'71	296	90	23·31	322	50	13·44	18·46
'72	548	167	23·35	642	86	11·81	17·53
'73	462	102	18·08	579	74	11·33	14·46
'74	486	129	20·97	608	62	9·25	14·86
'75	521	155	22·92	629	94	13·00	17·79
'76	555	149	20·20	564	110	16·32	17·00
Average	—	—	21·48	—	—	12·69	—

XI.—*St. Thomas's Hospital. Surgical Mortality during the Past Twenty-Six Years.*

Year.	Surgical. Males.			Surgical. Females.			Total Surgical Mortality.	Total Medical and Surgical Mortality.
	Discharged.	Died.	Mortality per Cent.	Discharged.	Died.	Mortality per Cent.		
1850.....	1,443	60	3·99	786	28	3·43	3·79	6·44
'51.....	1,521	54	3·42	871	24	2·68	3·15	5·46
'52.....	1,519	56	3·55	778	22	2·75	3·28	5·84
'53.....	1,454	95	6·13	774	24	3·00	5·07	8·10
'54.....	1,378	83	5·68	739	34	4·39	5·23	8·95
'55.....	1,435	86	5·65	769	76	3·27	4·83	7·74
'56.....	1,453	82	5·34	730	42	5·44	5·37	8·12
'57.....	1,438	91	5·95	832	21	2·46	4·70	7·98
'58.....	1,382	75	5·14	868	34	3·76	4·62	8·18
'59.....	1,275	69	5·13	679	28	3·96	4·72	8·54
Average	—	—	4·92	—	—	3·48	—	—
1860.....	1,242	82	6·19	652	36	5·23	5·86	8·89
'61.....	1,191	83	6·51	601	33	5·20	6·07	9·70
'62.....	824	63	7·10	436	25	5·12	6·52	8·92
'63.....	563	44	7·24	321	30	8·54	7·72	10·34
'64.....	600	61	9·22	316	42	11·73	10·10	12·66
'65.....	667	56	7·74	308	32	9·41	8·27	10·24
'66.....	649	51	7·28	359	34	8·65	7·77	11·47
'67.....	557	68	10·88	292	26	8·17	9·96	12·28
'68.....	605	54	8·19	300	26	7·97	8·12	12·09
'69.....	531	48	8·29	304	28	8·43	8·34	11·89
Average	—	—	7·33	—	—	7·42	—	—
1870.....	515	55	9·64	307	32	9·42	9·57	13·02
'71.....	535	50	8·54	318	28	8·09	8·37	12·90
'72.....	1,104	112	9·21	611	41	6·28	8·18	12·26
'73.....	925	114	10·97	717	48	6·27	8·98	11·18
'74.....	997	119	10·66	710	61	7·91	9·53	11·69
'75.....	904	99	9·87	662	61	8·43	9·27	13·08
'76.....	1,026	81	7·31	688	52	7·02	7·20	12·15
Average	—	—	9·49	—	—	7·44	—	—

XII.—*Mortality at Separate Epochs in St. Bartholomew's Hospital.*

Year.	Admissions	Deaths.	Mortality per Cent.	Year.	Admissions.	Deaths.	Mortality per Cent.
1783	3,825	139		1825	4,302	365	
'84	3,579	132		'26	4,420	349	
'85	3,972	182		'27	4,916	259	7·27
'86	3,750	316	6·30	'28	4,863	353	
'87	3,836	340		'29	5,128	317	
'88	4,553	371					
'89	4,303	368					
'90	4,367	318		1830	5,250	363	
				'31	5,275	414	
				'32	5,148	379	
1791	3,825	284		'33	5,164	392	
'92	3,993	274		'34	5,267	346	7·74
'93	4,285	375		'35	5,662	366	
'94	3,783	321		'36	5,548	424	
'95	4,402	316		'37	5,452	572	
'96	4,206	325	7·97	'38	5,135	480	
'97	3,890	322		'39	5,038	364	
'98	3,878	324					
'99	4,425	370					
1800	4,506	372		1840	5,015	419	
				'41	4,724	324	
				'42	4,838	339	
1801	4,410	326		'43	5,372	377	
'02	3,895	325		'44	5,673	361	7·20
'03	3,908	339		'45	5,419	356	
'04	4,006	312		'46	5,841	383	
'05	3,700	308		'47	5,801	428	
'06	3,643	286	7·93	'48	5,826	480	
'07	3,958	342		'49*	5,692	432	
'08	3,849	279					
'09	4,033	312					
'10	3,940	292		1860	5,686	623	
				'61	5,602	597	
				'62	5,430	605	
1811	3,857	277		'63	5,390	557	
'12	4,075	311		'64	5,556	617	10·77
'13	3,909	274		'65	5,598	567	
'14	3,933	288		'66	5,070	563	
'15	3,020	272		'67	5,170	548	
'16	2,675	250	7·76	'68	5,422	573	
'17	2,599	195		'69	5,124	571	
'18	2,751	197					
'19	2,914	245					
'20	4,057	314		1870	5,090	525	
				'71	5,687	556	
				'72	5,528	503	
1821	3,744	258		'73	5,339	489	9·91
'22	4,347	277		'74	5,777	569	
'23	3,725	269	7·27	'75	5,548	571	
'24	2,810	336		'76	5,125	563	

* Exclusive of 477 cases of cholera, which were attended with 102 deaths.

XIII.—*Relative Mortality of the Sexes at Separate Epochs in St. Bartholomew's Hospital, distinguishing the Two Main Subdivisions of Disease.*

Year.	Medical Cases.				Surgical Cases.			
	Males.		Females.		Males.		Females.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
1842.....	640	120	680	83	1,769	71	1,749	65
'43.....	907	146	774	88	1,883	77	1,808	66
'44.....	957	141	767	75	2,032	73	1,917	72
'45.....	924	134	791	67	1,912	83	1,792	72
'46.....	1,051	135	916	97	1,951	93	1,923	58
'47.....	1,089	154	919	36	1,915	98	2,328	80
'48.....	1,075	174	944	101	1,882	103	1,925	102
'49.....	1,108	151	954	118	1,833	81	1,797	82
'50.....	989	133	913	94	1,872	80	1,748	71
'51.....	1,038	243	950	107	2,019	113	1,950	81

Note.—Mortality per 100 admissions, medical: males, 15·65; females, 10·0; Surgical: males, 4·57; females, 3·95.

Year.	Medical Cases.				Surgical Cases.			
	Males.		Females.		Males.		Females.	
	Dis-charged.	Died.	Dis-charged.	Died.	Dis-charged.	Died.	Dis-charged.	Died.
1870.....	860	208	980	152	1,266	101	1,131	64
'71.....	932	224	899	143	1,923	127	1,377	62
'72.....	805	197	876	141	1,885	118	1,447	59
'73.....	928	204	871	145	1,775	95	1,276	45
'74.....	935	237	984	150	1,879	120	1,410	60
'75.....	816	239	952	157	1,940	117	1,269	58

Note.—Death-rate per 100 cases treated to a termination, medical: males, 19·87; females, 13·7. Surgical: males, 5·9; females, 4·2.

XIV.—*Medical and Surgical Mortality in St. Bartholomew's Hospital at Separate Epochs.*

Year.	Medical Cases.			Surgical Cases.		
	Admissions.	Died.	Mortality per Cent.	Admissions.	Died.	Mortality per Cent.
1830	1,647	201		3,603	1[illegible]2	
'31	1,623	238		3,652	176	
'32	1,704	246		3,444	133	
'33	1,668	224		3,496	168	
'34	1,667	210		3,600	136	
'35	1,845	240	15·31	3,817	126	4·24
'36	1,818	269		3,730	155	
'37	1,868	413		3,584	159	
'38	1,530	308		3,605	172	
'39	1,390	218		3,648	146	
1840	1,386	236		3,628	183	
'41	1,261	183		3,463	141	
'42	1,320	203		3,518	136	
'43	1,781	234		3,691	143	
'44	1,724	216		3,949	145	
'45	1,715	201	13·34	3,704	155	4·31
'46	1,957	232		3,874	151	
'47	2,008	250		3,793	178	
'48	2,019	275		3,807	205	
'49	2,062	239		3,630	163	
1850	1,902	227		3,620	151	
'51	1,988	150		3,969	194	
'52	1,966	277		3,831	190	
'53	2,011	293		3,803	192	
'54	2,364*	354		3,739	171	
'55	2,255	350	14·14	3,711	209	5·13
'56	2,370	337		3,563	216	
'57	2,480	364		3,339	213	
'58	2,427	416		3,379	171	
'59	2,526	385		3,339	154	
1863	2,074	322		3,316	235	
'64	2,048	401		3,508	216	
'65	2,079	374		3,519	193	
'66	2,005	418	18·34	3,065	145	5·77
'67	1,938	365		3,232	183	
'68	2,351	392		3,071	181	
'69	2,149	415		2,975	157	
1870	2,128	360		2,962	165	
'71	2,198	367		3,489	189	
'72	2,019	338		3,509	177	
'73	2,148	349	16·94	3,191	140	5·13
'74	2,306	387		3,471	182	
'75	2,164	396		3,384	175	

* Exclusive of 326 cases of cholera, attended with 108 deaths.

XV.—*Relative Numbers of the Sexes Treated in the Glasgow Royal Infirmary during the Last Ten Years, with the Mortality of the Different Classes.*

I. MALE MORTALITY.

Year.	Medical.			Surgical.			Fever.		
	Total.	Died.	Per Cent.	Total.	Died.	Per Cent.	Total.	Died.	Per Cent.
1866....	1,344	189		1,527	130		664	120	
'67....	1,321	161		1,495	107		477	73	
'68....	1,431	181	12·42	1,579	98	6·89	474	83	15·91
'69....	1,415	136		1,594	115		871	153	
'70....	1,244	172		1,700	96		977	112	
1871....	1,396	192		1,657	132		746	69	
'72....	1,424	218		1,959	171		314	46	
'73....	1,487	234	14·65	2,097	161	8·42	185	46	13·47
'74....	1,551	228		2,022	201		60	10	
'75....	1,774	253		1,801	160		62	12	
'76....	1,653	236		1,820	132		21	4	

II. FEMALE MORTALITY.

Year.	Medical.			Surgical.			Fever.		
	Total.	Died.	Per Cent.	Total.	Died.	Per Cent.	Total.	Died.	Per Cent.
1866....	796	85		643	51		571	76	
'67....	796	105		519	25		417	68	
'68....	803	81	10·18	631	32	5·14	407	42	11·38
'69....	807	57		588	35		789	99	
'70....	727	72		634	32		911	65	
1871....	860	108		764	48		601	35	
'72....	795	119		679	50		281	37	
'73....	787	108		664	43		124	9	
'74....	852	104	13·47	677	54	6·35	84	8	8·08
'75....	945	145		592	37		46	4	
'76....	852	102		637	43		39	2	

XVI.—*Medical and Surgical Cases Admitted to the London Hospital from 1856-76, with the Mortality for each Year.*

Year.	Admitted.			Died.			Mortality per Cent.		Total Death-Rate.
	Medical.	Surgical.	Total.	Medical.	Surgical	Total.	Medical.	Surgical.	
1856.....	—	—	4,209	—	—	291	—	—	6·9
'57.....	—	—	3,935	—	—	315	—	—	8·0
'58.....	—	—	3,976	—	—	301	—	—	7·5
'59.....	—	—	3,669	—	—	343	—	—	9·3
1860.....	—	—	3,918	—	—	323	—	—	8·2
'61.....	—	—	4,169	—	—	350	—	—	8·4
'62.....	—	—	4,164	—	—	318	—	—	7·6
'63.....	1,287	3,081	4,368	160	221	381	12·4	7·1	8·7
'64.....	1,156	3,078	4,234	167	278	445	14·4	9·0	10·5
'65.....	1,176	3,141	4,317	164	220	384	13·9	7·0	8·9
'66....	1,248	2,996	4,244	177	217	394	14·2	7·2	9·3
	825	—	825	327	—	327	39·5*	—	—
'67.....	1,499	2,835	4,334	249	177	426	16·6	6·2	9·8
'68.....	1,588	3,344	4,932	308	210	518	18·7	6·4	10·5
'69.....	1,488	2,910	4,398	277	197	474	18·6	6·7	10·8
1870.....	1,549	3,206	4,755	338	244	582	21·8	7·6	12·3
'71.....	1,637	3,144	4,781	308	226	534	18·2	7·1	11·2
'72.....	1,884	3,508	5,392	359	239	598	19·2	6·8	11·1
'73.....	1,913	3,700	5,613	355	274	629	18·5	7·4	11·2
'74.....	2,391	3,304	5,695	405	263	668	16·9	7·9	11·7
'75.....	2,358	3,446	5,804	446	251	697	18·9	7·3	12·0
'76.....	2,443	3,860	6,303	448	278	726	18·2	7·3	11·6

* Number refers to the cases of cholera treated in the hospital during the year.

XVII.—*Annual Returns for the Last Twenty-one Years from the Lying-in Charities attached to the Three Endowed London Hospitals, the Women being Confined at their own Homes.*

Year.	Guy's.		Bartholomew's.		St. Thomas's.	
	Confinements.	Deaths.	Confinements.	Deaths.	Confinements.	Deaths.
1856	2,011	6	956	7	402	1
'57	1,731	6	943	2	705	2
'58	1,651	5	990	7	859	None
'59	1,640	5	823	1	648	„
1860	1,404	4	997	1	632	„
'61	1,505	4	1,141	1	621	2
'62	1,691	3	1,346	5	432	2
'63	1,576	11	1,331	8	643	None
'64	1,608	12	1,278	2	728	5
'65	1,568	8	1,229	4	741	1
'66	1,585	3	566	3	No	returns
'67	1,727	4	568	1		„
'68	1,783	8	881	3		„
'69	1,929	5	902	1	1,291	7
1870	2,183	10	921	1	1,232	4
'71	2,240	8	345	1	1,082	4
'72	2,518	7	463	2	920	3
'73	2,213	16	537	1	1,318	10
'74	2,449	17	655	2	1,475	11
'75	2,334	9	631	1	1,438	5
'76	2,451	13	792	2	1,591	2
Deaths per 1,000	—	4·1	—	3·1	—	3·5

Note.—Of the total children born in connection with the Guy's Lying-in Charity, 44·4 per 1,000 were still-births; and 1,011 children were born to every 1,000 confinements.

XVIII.—*Annual Returns from the Four London Lying-in Hospitals for the Last Twenty-Two Years.*

Year.	Queen Charlotte's.		City of London.		General Lying-in.		British Lying-in.	
	Confinements.	Deaths	Confinements.	Deaths.	Confinements.	Deaths.	Confinements.	Deaths.
1855	170	4	433	6	358	15	139	2
'56	88	—	468	7	352	7	122	—
'57	245	3	464	2	244	5	105	1
'58	341	4	484	2	282	5	62	—
'59	320	27	426	3	264	3	77	2
1860	256	19	469	11	278	3	102	—
'61	369	18	534	6	278	13	114	1
'62	351	19	505	11	237	2	103	4
'63	386	7	583	3	267	—	171	1
'64	384	13	505	9	289	2	186	—
'65	225	9	507	9	297	3	175	5
'66	408	5	494	11	308	1	210	5
'67	412	7	445	9	337	10	288	5
'68	464	3	493	1	319	7	172	4
'69	414	6	475	4	308	2	169	1
1870	484	6	327	14	341	2	153	9
'71	452	7	460	4	297	1	226	4
'72	433	11	421	2	311	—	195	3
'73	416	17	403	4	314	5	172	3
'74	443	9	425	7	278	2	144	—
'75	394	9	400	4	264	6	155	1
'76	416	19	408	8	293	3	—	—
Mortality per 1,000	—	28·2	—	13·5	—	14·8	—	15·7

Note.—The death returns are taken from the "Annual Summaries" of the registrar-general, and the number of confinements have been supplied by the secretaries of the respective institutions.

The Cost *of* English Local Government.

By Captain P. G. Craigie.

[Read before the Statistical Society, 20th March, 1877.]

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The attention recently attracted to the heavy and increasing burdens imposed upon ratepayers under the name of local taxation, and the interest excited by the proposals which have from time to time been made to reform and to simplify the machinery of our local administration, must be my apology for venturing to bring before this Society some observations on the cost of English local government at the present time.

While the interest of parliament had been centered in the reform of our national fiscal system, the question of local taxation, its pressure and its incidence, was left to a great extent out of sight, until the growing importance of this department of finance was urged, in 1868, by Sir Massey Lopes on the attention of the then House of Commons. The subsequent discussions which ensued, the elaborate report prepared by Mr. Goschen, the unsuccessful legislative proposals of the late government, the decision of the last parliament as to the expediency of discriminating between the local and the imperial objects charged on the local rates, the action of the various chambers of agriculture, the resistance offered by aggrieved ratepayers to every proposal tending to increase local burdens, and last of all the concessions made by the present administration, have one and all contributed to invest with peculiar interest any attempt to investigate the complex details of the local expenditure of the country.

A remembrance of the valuable information supplied to this Society by the able Tayler prize essays of Mr. Palgrave and Mr. Scott, and of other interesting discussions bearing more or less directly on questions of local taxation and local government which have taken place, makes me ask indulgence for the much more limited scope and range of the observations I am now

anxious to offer. At the same time I would bespeak that leniency in judgment which is, I believe here as elsewhere, accorded to a first effort; especially as, from several concurring causes, the paper I am about to read falls greatly short of the ideal I had originally proposed to myself, and, as I am very conscious, has proved both fragmentary and incomplete.

In asking your consideration for the cost of local government in England at the present time, I would endeavour first of all to inquire what are the means at our disposal for obtaining information as to the aggregate local expenditure of the country, and how that information may be improved and increased. I would then try to inquire in what directions the expenditure has chiefly increased during the recent period for which adequate data are available; and attempting an estimate of our present position in this matter, I would ask you to look a little more narrowly into the distribution of local funds, and the varied authorities responsible for their administration; and then invite the opinion of this Society as to the best means by which the existing heavy cost of local government may be reduced by a simplification of local administrative bodies, a better distribution of their functions, and if practicable by a sounder system of local finance.

I.—*Statistics of Local Finance.*

The revival of attention to the incidence and magnitude of our local taxes to which I have alluded, resulted in the first instance in a strong desire for more accurate information than was readily available, both as to the increase and character of the several imposts levied and the purposes of their expenditure. With the exception of the annual poor rate returns (which separately but most accurately accounted for the most important local tax) no complete or collected data was at hand to determine with any accuracy any of these matters.

So far as regards "rates" alone, to which as the form of taxation most used and most complained of, chief attention was directed, the voluminous returns of Mr. Ward Hunt in 1868, as amended in 1870, furnished a vast amount of detailed information.

Still more fully was the field of inquiry extended in 1871 by the researches of Mr. Goschen in his report to the Treasury, "On the "progressive increase of local taxation, with especial reference to "the proportion of local and imperial burdens borne by the "different classes of real property in the United Kingdom as "compared with the burdens imposed upon the same classes of "property in other European countries." In this report account was taken not only of the direct taxation raised by English local authorities (to which attention had been generally confined by

earlier returns), but also of their revenue from other sources, and —in terms somewhat general—of their aggregate outlay. Valuable as much of the matter thus collected undoubtedly proved itself, and great as was the ability and industry which marked the compilation of its exhaustive tables, the effect of this report as designed to meet the complaints against ratal taxation, was scarcely so great as was probably expected. This, I believe, arose at least in part from the comparatively restricted limits of the "special reference" I have alluded to, which dealt rather with the relative burden of different classes of realty and did not directly encounter the allegation of an unfair pressure of taxation, imperial and local, on real as distinguished from personal property, an allegation which it will be remembered was the primary grievance of ratepayers in this matter.

I do not propose in a paper which has for its objects an examination only into the cost of local government, to refer to the arguments of this famous report, but simply to quote its tables as giving at least a more consistent and relatively more complete view of the entire local revenue and expenditure of England in 1868, than was at that time otherwise available. I would only ask in doing this to be allowed to guard myself from expressing an acquiescence in all the inferences drawn from these figures, and all the conclusions of the report,—conclusions which have been ably combatted by a lamented member of this Society, Mr. Dudley Baxter. With regard, however, to the light it threw on the existing position of local finance, I think its figures were most welcome to every inquirer into a dark and difficult question. Making one correction for a somewhat serious over statement of 45 per cent. in the amount then paid in Government subventions, an error most probably due chiefly to a misreading of the receipts of poor law authorities from this source, I believe we may rely on the estimate of this report that in the year 1868 local authorities received for purposes of local government approximately the following sums, viz.:—

	£
From rates	16,223,000
„ dues, tolls, fees, &c.	4,363,000
„ Government subventions	840,000
„ loans	5,453,000
„ other sources	3,260,000
Total	30,139,000

The several objects on which this revenue was expended are not detailed in Mr. Goschen's summary, which divides the aggregate annual expenditure of 30,237,000*l.* only into disbursements on

"General Purposes," on "New Works," on "Interest," and on "Repayment of Debt," a classification which it is admitted is very far from complete, on account of the irregularity of the separate returns from which it is compiled, and one which could in any case afford but little information as to the distribution of local funds.

In order, however, to obtain some idea of the cost of different local functions at this date, I have endeavoured to make a more complete analysis from the special returns relied on by Mr. Goschen, and of which he gives in each case a separate abstract. The results of this attempt are given in Table I, and tend to show that local authorities in 1868 spent approximately the following sums, viz. :—

	£
On relieving pauperism	7,419,000
„ the care and maintenance of lunatics	902,000
„ education	42,000
„ police and crime repression	3,219,000
„ maintaining facilities for internal and external traffic, including roads, streets, markets, and harbours	5,934,000
„ public and sanitary works	6,218,000
„ miscellaneous objects	1,928,000
„ interest and repayment of debt	4,575,000
	30,237,000

The heads under which I have grouped these statements are selected chiefly to facilitate comparison with subsequent returns, and in all cases the figures must be regarded as approximate only. In one case, that of the cost of roads and streets in towns, an estimate has had to be given, based on the proportion which that expenditure now bears to the total outlay of these districts, no details being furnished on this point in 1868. In one or two smaller matters where Mr. Goschen estimates the expenditure of omitted authorities, a similar estimate of the proportions of different items has been requisite. While salaries have been generally charged rateably to the larger heads of direct expenditure, or grouped as in counties, under the cost of the chief county function, that of repressing crime, or in towns returned with the cost of public works. Again, although in most cases the repayment of debt was in 1868 returned separately from the interest paid, I have grouped these items together, both because in two important cases, poor law authorities and local boards, no such distinction is drawn, and because the later returns with which I wish subsequently to compare these data, have generally ceased to maintain this distinction. It will be noticed that the expenditure of poor law authorities includes their extraordinary outlay of money "autho-

"rised to be raised" for permanent works during the year. This was no doubt added by Mr. Goschen with a view to obtaining a similarity, which would otherwise be absent, between the accounts of these authorities and the other local bodies who include their loans in their ordinary revenue. There can be no dispute that the poor law method of account is the more correct, and that by embracing in the transactions of the year on one side the receipt of borrowed money, and on the other not only interest and repayment of debt, but also the disbursement of the borrowed funds on the works in hand, the returns duplicate to a certain extent the apparent outlay. As, however, this practice obtains throughout the local accounts, it has been applied to poor law expenditure simply for the sake of giving uniform results.

Before going on to notice what changes have taken place in the cost of local government since 1868, by contrasting the analysis of Mr. Goschen's return in Table I with that I offer in Table II of the local accounts similarly arranged for the last available year (1874-75), it will be best to notice what advances have been made in furnishing more complete and reliable data than were extant at the period of Mr. Goschen's investigation.

With reference to the poor rate we have for a long period had most full and accurate returns. The last annual poor rate return which recently appeared was, I believe, the sixty-ninth of its series, and the highest credit is undoubtedly due to Mr. Purdy and the statistical department of the Local Government Board, for the light thus happily kept alive amid the dark maze of other local statistics. But although the poor rate is the greatest of our local imposts, and although under this title a series of rates originally separately levied are now collected, yet this return will not alone suffice to afford all the information requisite. It gives us with clearness and accuracy the annual history of the rate whose name it bears, showing both the actual levy, and the receipts of poor law authorities from treasury grants, and from other sources. It gives us also the outstanding indebtedness of this class of local authorities, and though it does not show the loans raised or the expenditure of borrowed money within the year, still particulars at least of the authorised loans are forthcoming at a later period in the annual report of the Local Government Board. The poor rate return gives us at the same time an analysis of the sums expended in poor relief and shows the legal and incidental expenditure. It accounts also for the disbursements of poor law authorities for birth and death registration, for parliamentary registration, for vaccination and so on. It shows also the disposal of the several contributions out of the poor rate to other local authorities. It separately distinguishes the payments made to school boards, to highway boards, and to

rural sanitary authorities. It gives the total amount handed over to county, borough, and police authorities, but fails to discriminate between the respective claims of each of these three classes of bodies; while it omits to show the payments made out of the poor rate to burial boards, an item by no means inconsiderable, and probably included in the large miscellaneous heading. The last two points it would seem are of sufficient interest to justify a desire for further information being afforded.

Limited in its function to the single rate with which it deals, it can of course give no information as to the *disbursements* of those authorities who derive the whole or a part of their revenue from the poor rate contributions to which I have referred. It is, therefore, necessary to see what provision has been made for obtaining full information on these points.

The series of abstracts of the county treasurers' accounts give the data for one important class of authorities. Unfortunately, however, these returns were some time ago shown to be not always of the accurate character of the poor rate statistics, and even now, when their transfer from the Home Office to the Local Government Board has greatly improved their clearness and their form, the diverse practice of the counties in returning their lunatic asylum disbursements, which in one place I am disposed to believe includes, and in another excludes, the payments by boards of guardians, renders the information on this point at least somewhat misleading.

Municipal boroughs are also by law directed to make similar annual statements, although these do not seem to have been regularly published previous to 1867. Since 1871, they have, however, been issued under the auspices of the Local Government Board, and have now also gained greatly in arrangement and facility of reference. By the same department are now issued the separate statements of highways and turnpike authorities; while separate accounts are laid before parliament, from the Metropolitan Police Commissioners, the Metropolitan Board of Works, the Pilotage and Mercantile Marine, and as to certain particulars by the chamberlain of the city of London. School boards also now annually return to the education department an abstract of their accounts.

There are thus secured, by means of separate annual statements, abstracts of the accounts of eleven of the existing twenty-three classes of local authorities; five of the eleven being issued directly under the auspices of the Local Government Board, and six independently furnished.

The remaining twelve descriptions of local governments report their transactions in another manner under the general Local

Taxation Returns Act of 1860. The benefits of this statute were not till lately very fully secured. It appeared to aim not only at supplying the omission to furnish parliament annually with a statement of all local levies, but at bestowing powers on the central executive to systematise and make uniform the varying independent returns of local governing bodies. A statement of existing local authorities, and the mode in which their accounts come before parliament, is given in Table IV.

Grave omissions appear to have characterised the earlier statements furnished by the Home Office under the Act of 1860. The collection of these returns, their tabulation and presentation to parliament has now by the Local Government Board Act of 1871, devolved on the Local Government Board, by whom their arrangement and accuracy has been very greatly improved.

Taking the occasion of the annual issue of this abstract, the Local Government Board have still further facilitated a knowledge of the aggregate system of local finance by prefacing the details so presented with a tabular summary, showing in a condensed form an approximate annual statement of the receipts and expenditure of all English local authorities whatsoever.

A very considerable advance has thus been made in the information available, and it has proceeded so far as to render possible an attempt, long desired by those who have most strongly urged inquiry into our local burdens, to establish annually a sort of local taxation budget. This was given to parliament for the first time by the President of the Local Government Board last year, in the form of a statement made during the progress of the Bill now annually introduced, to facilitate the granting of loans to local authorities by the public works loan commissioners. Addressed as this statement was naturally in greatest part to the grave question of the growing indebtedness of local bodies, an indebtedness the development of which is in part apparent, owing to facts brought to light by better returns, and in part real, owing to the recent impulse afforded to local and sanitary enterprises, the details of revenue and expenditure were only very generally entered upon; while the difficulty even under the improved system now existing of obtaining the requisite information, was doubtless the reason of its being deferred till the month of July, a date when experience proves parliament to be somewhat disinclined to regard financial statistics with the same care and attention as is the case in April.

The amplification of this annual statement, and its more speedy presentation, is therefore much to be desired, and the expediency of attracting more direct and accurate attention to local finance will not now be denied. In the speech from the throne at the prorogation of parliament in August last, the legislature was

commended for exercising a "Greater watchfulness over the cost "of services which are every year becoming more important, and "the consideration of which ought not to be dissevered from that "of imperial expenditure."

And it is clear that the benefit of this watchfulness can be secured only by still further expediting and systematising our system of local financial statistics.

This leads me to inquire in what respect the data now available falls short of our legitimate requirements.

The great irregularity in the periods for which local accounts are made up, and for which returns are transmitted, is the first great fault. Considerable progress has been made in bringing about a certain degree of improvement on this point, but much has still to be done. Thus the data nominally for 1868 given in the report of Mr. Goschen, and to which I have already referred, were gathered from a series of returns stretching over a period by no means coinciding with the year 1868, and were in fact derived from statements or abstracts of annual accounts rendered for periods of twelvemonths ending in one case possibly as early as the 2nd June, 1866, and in another certainly as late as the 29th March, 1869. This is so far improved that in place of an interval of nearly three years, only one of eighteen months now occurs between the earliest and the latest of the series of local accounts grouped together in the summarised returns.

In Table VI, I have shown the dates of the several accounts in Mr. Goschen's statement, and of those given in the last Local Government Board summary for 1874-75.

It will be observed that in the last instance the accounts of highway authorities (in part) are, for example, strictly speaking, for the year 1873-74, ending on the 25th March, 1874, while those of county authorities, of port sanitary authorities, and (in part) of the city of London, come down to as late a date as the 29th September, 1875.

Despite the improvements, therefore, which a glance at Table VI will show to have been effected, it is clear there yet remains an irregularity which greatly confuses local accounts, especially when it is remembered that owing to the system of "precept rates," and contributions from one local authority to another, it is impossible accurately to trace these sums where this varied practice as to dates of account prevails. Over 5,000,000*l.*, or about 23 per cent. of the rates now levied, are thus contributed under precept, and pass through the accounts of at least two and sometimes three classes of local authorities. This alone furnishes a strong argument for a uniform period and system of account and a proper official audit.

To put an end to this, attempts have been made by those

members of the House of Commons who were most anxious to obtain the fullest data respecting local finance. In 1872, and again in 1873, a measure was introduced by Mr. Pell, with a view of supplementing any deficiency of power in the Local Government Board to obtain the required information. Providing in the first instance for the closing of all local accounts as nearly as possible at Lady-day in each year, and in the second instance securing at least an annual return at that date, this Bill would have given the Local Government Board full power to obtain uniform returns in sufficient detail to enable it to present to parliament annually in the following month of February a comprehensive summary in a prescribed form, both of the sources of local revenue and the chief heads of local expenditure. With the assent of the then government this measure passed through most of its stages, and was only stopped becoming law by the resistance of one or two municipalities to the returns required.

It is to be hoped that some such measure may at no distant date be obtained, and the Local Government Board be thus enabled to make more complete and consistent the figures they now attempt to furnish.

It is, however, by no means clear to me that without any further statutory authority, a somewhat similar, though not so entirely a satisfactory a course might not even now be taken by the Local Government Board under their present powers. By the Local Taxation Returns Act of 1860 (23 and 24 Vict., cap. 51), it is not only provided that this department (exercising in this matter the functions then entrusted to the Secretary of State, and now by the Local Government Board Act of 1871, expressly transferred to the board) should receive and publish the accounts of the authorities making returns under the Act, but that they might by the fifth section of the statute "*by order direct*," that all, or any, annual returns by-law directed to be made to the Secretary of State, or to any Government department, should in future be made under the Act of 1860, that is, should be made in such form as the board may prescribe, and for the latest period previous to June in each year.

This would at least secure an approximate return for a more nearly coincident period than at present, though I think the small additional step of prescribing a single form and a uniform date (probably the 25th March would be most convenient) would be the preferable course.

Besides this irregularity of date, the summary now given seems defective in other particulars. It appears to me to proceed too exclusively on the old system of having regard chiefly or solely to the taxes directly levied, rather than to the details of revenue and expenditure of all local governing bodies.

It divides all local taxes into three classes, "Rates," "Tolls, "and Dues, and Rents," and "Duties," and arranges under these heads, and with reference to these forms of revenue, the several abstracts it presents in three separate tables.

The same authorities thus have occasionally their transactions returned in different places, a practice which I would submit tends to confusion and want of accuracy. Thus in the last general return for 1874-75, I find municipal boroughs, metropolitan police commissioners and burial boards, appear as separately accounting in one table for rates, and in another for tolls, dues and rents, while the city of London accounts appear in all three tables. And in some of these cases the inaccuracies I have alluded to are apparent. Thus the metropolitan police commissioners, according to the first table, spend 1,099,851*l.*, besides, according to the second table, spending a further sum of 22,523*l.*, both of which items appear to be embraced in the general total, although a reference to the separate accounts of this authority would show that the first mentioned sum includes the whole of their actual disbursements. Once more, the city of London Police Fund receives from the corporation of the city a payment of 19,510*l.* out of the general revenues of what is called the city estate account, and this sum appears to be entered twice over, both as regards receipt and expenditure, appearing in the first table among receipts from "other sources" than rates, and in the second table among the revenue there accounted for, while the expenditure is correspondingly duplicated.

I would, therefore, submit whether it would not be more desirable to give the summary of the accounts of each class of authority in a single table, distinguishing between the various imposts by which their exchequer is fed, but not attempting to allocate expenditure to particular taxes—a course which must often be doubtful and is never attempted in imperial finance.

At the same time it may not be, perhaps, out of place here to suggest some doubt as to the propriety of including receipts from "rents," as I observe is now done, along with "tolls and dues" as indirect local taxes; while interest from invested capital is not so included. The item is in the case of boroughs of sufficient magnitude to be separately distinguished, reaching as it does with fines for renewal of leases, 329,559*l.*, and forming, in such cases as Liverpool, no inconsiderable source of permanent revenue, and in some small boroughs, such as Wisbeach, Swansea, Stratford-on-Avon, amounting to sums greatly exceeding the rates received, or even rendering their levy unnecessary.

A distinction too was drawn by Mr. Ward Hunt's return, as amended, and repeated in Mr. Goschen's tables, as to the revenue of improvement commissioners (now included in urban sanitary

authorities), a large part of their receipts then appearing to come under the head of "taxes, tolls, and dues" as distinguished from "rates." This does not appear to be maintained in the later returns.

Another defect in the summary for 1874-75 appears to me to be that, in one case at all events—and that the important one of school boards—we have scarcely got the most recent available accounts employed. While borough statistics up to the 31st August, and port sanitary and county accounts up to the 29th September, 1875, are given, we have here included school board accounts only for an earlier year, that ending on the 29th September, 1874, and this, although a summary of the receipts and expenditure of these bodies for the subsequent year, was on the table of the House of Commons and in the hands of the public two months before the date of the general summary. The fact of these accounts being a year behind the others is, no doubt, acknowledged in a foot note, but from the "year of the return" being stated in the table itself to be "1874-75" exactly as in the case of county authorities, this matter stands in some danger of being overlooked. It is somewhat difficult to learn the cause of the delay in this special case, since although, no doubt, the county abstracts are prepared in the Local Government Board's office, and the school board abstracts in that of the Privy Council, these departments may be assumed to be on speaking terms, and in any case by the last section of the Local Government Board Act of 1871, duplicates of all returns to any department of the Government are compelled, under penalty, to be furnished to the Local Government Board.

Perhaps, also, when surveying the extent to which even the improved returns now available fall short of the desired accuracy and uniformity, I may be allowed to urge that the highway and turnpike abstracts—the former, at least in part, by far the farthest back of all the local returns—should be somewhat expedited. The turnpike statements in detail for 1874, though quoted as the authority for the sums mentioned in the summary, which bears date on the 3rd August, 1876, could not be had by the public for reference until December last.

Last of all, if we attempt to learn the precise items of our local expenditure, we will not find in the official summary any details given, but must in every case refer to the separate accounts of each class of authority for this knowledge. The aggregate expenditure either of each group of authorities, or (in the form adopted) the sum apportioned as expenditure to a particular series of rates, dues, or tolls is given. When it is remembered how largely different bodies have common objects of expenditure and how varied are the descriptions of outlay frequently incurred by each, further definite

information in a compact and easily accessible form is much to be desired.

Attempts have been made to obtain this by special returns moved for by private members, but these necessarily lack the precision and uniformity so desirable. While an endeavour officially to show the chief objects of local expenditure in 1872-73, given in the fourth report of the Local Government Board, failed—no doubt from the irregularity of the local returns—to present an absolutely accurate picture of local outlays; thus recognising, for example, only certain sources of school board income, it showed of their expenditure for educational purposes a sum of only 179,788*l.* in a year in which the separate accounts of these bodies acknowledge an outlay of 1,174,985*l.*

If I have thus dwelt at some length on the points as to irregularity of date, arrangement and completeness of the improved annual summary furnished by the statistical department of the Local Government Board, I have done so solely with a view to point out where even that document may be still further improved, and with the expectation that in some points I may possibly learn what are the difficulties to be surmounted, and which an outsider is but too apt to overlook.

I would, however, venture to submit the propriety of securing a thorough uniform and complete audit of all local accounts whatsoever by an official auditor—a simple, uniform and definite form of return for a single coincident period of twelve months in every case—and a complete and prompt annual statement of all local transactions, analysing all branches of revenue, expenditure, and indebtedness, and, if practicable, not only arranged as we have now in some instances to thank the Local Government Board for doing —geographically—but also like the poor rate returns, summed up in that classification, so that at a glance the whole local finance of the entire country and of each of its sections should be made clearly and statistically plain.

II.—*Local Expenditure in* 1874-75.

I have, perhaps, at too great length followed the inquiry I proposed as to the methods by which the actual cost of local government is to be learned. Making use of these means, and supplementing, where practicable, the official statement, I have endeavoured to show in Table II, in as near as may be the same form as that used for the analysis of Mr. Goschen's tables in 1868, what the aggregate outlay of English local authorities amounted to in 1874-75, the figure at which I place it being 41,877,000*l.* The difference of 1,171,000*l.* here shown between the estimate in this table and that of the summary last issued by the Local Government Board, arises from a

use, in the case of school boards, of the later returns to which I have referred; from the including of the extraordinary poor law and rural sanitary outlays represented by the loans authorised to be raised in the year; from a considerable correction which it seemed necessary to make in the sums entered as expended by the Metropolitan Board of Works (and which, from the accounts of that body, would appear understated in the official summary); as well as from some other minor alterations. Both in this case and in 1868, church rate expenditure, now a matter of less than 17,000*l.*, is omitted.

In Table III I have at the same time tried to show what has been the increase or decrease of expenditure on each head in the seven years between 1868 and 1875.

It may be noted that the cost of pauperism (excluding payments for pauper lunatics) alone shows a decrease amounting to 738,000*l.*, or nearly 10 per cent., the outlay on that head now standing at 6,681,000*l.* More than half of the decrease here shown, or 467,000*l.*, is in the extraordinary expenditure for which loans were required in the year. On the other hand, lunacy appears to cost now 1,437,000*l.*, or 535,000*l.* more, though I am disposed to question whether the whole of this amount, in spite of its being so shown in the returns, is real—a doubt which arises from my belief that the county accounts in several instances include an expenditure already returned by guardians. Education cost 2,199,000*l.*, and is practically a new charge altogether. Crime costs 3,749,000*l.*, or 530,000*l.* more than it did. While other outlay under the several heads of traffic, public works, and other objects, has reached 19,269,000*l.*, showing an increase of 5,189,000*l.*, and the item of the interest and repayment of debt by all classes of authorities has risen to 8,539,000*l.*, or 3,964,000*l.* more than in 1868. The relative changes in the percentages of outlay formed by different heads will be seen in Tables I and II. Thus, the cost of pauperism which, in 1868, formed 24½ per cent. of all local outlay, in 1875 had sunk to 16 per cent., while other heads had correspondingly risen.

On the whole, the net result shows an aggregate increase of 11,640,000*l.* or 38½ per cent. over the expenditure of 1868. It is noticeable that of this increase by far the greatest part has taken place in the provincial towns of England, who alone expend 7,646,000*l.* more than they did seven years ago, all of this excess being expended by the *sanitary* as distinguished from the *municipal* authorities. It must not be supposed, however, that the purposes of this increase were all (at least directly) connected with the preservation of public health. The so-called sanitary authorities are by no means so united in their functions as their name would imply, and a short analysis of the sum of 11,760,000*l.* which was in 1874-75

expended by these bodies, will show how largely their duty is to minister to the general comfort, convenience, or voluntary embellishment of their 921 localities. According to the returns—

	£			
They spend	3,530,000	or about	30	per cent. of this outlay on the interest and repayment of debt.
,,	2,893,000	,,	24½	per cent. on the supply of gas and water.
,,	1,727,000	,,	14½	,, streets and roads.
,,	1,380,000	,,	12	,, public works.
,,	1,227,000	,,	10½	,, miscellaneous items.
,,	420,000	,,	3½	,, salaries.
and no more than	583,000	,,	5	,, works of sewerage.
	11,760,000		100	

No statement of the actual expenditure of local authorities will suffice to give a complete picture of the magnitude of the interests involved, unless account be taken of the outstanding local debt. That debt in 1874-75 exceeded 94,000,000*l.* From the absence of sufficient data for 1868 I have been unable to trace the growth of these liabilities in the same way as I have tried to do that of actual expenditure. A note of the share respectively incurred by different classes of authorities is, however, instructive, as to its character and general objects:—

	£
Thus poor law authorities owe	3,521,000
,, county ,, ...	3,145,000
,, town ,, ...	39,496,000
,, metropolitan ,, ...	17,976,000
,, road ,, ...	1,834,000
,, maritime ,, ...	20,959,000
,, miscellaneous ,, ...	3,372,000
,, School Board ,, ...	3,801,000
Total	94,104,000

These groups of authorities are the same as those I have placed together in Table II. It will be noticed that urban and metropolitan authorities for purposes of general government often called, but incorrectly as we have seen, "sanitary," account for 61 per cent. of the whole debt, while harbour construction is chargeable with some 22 per cent. of the aggregate total.

III.—*Distribution of the Cost of Local Government.*

The cost of local government it will be seen naturally divides itself into two great divisions, which have sometimes been called remunerative and non-remunerative outlay. I question if the terms are correct. All taxation must, if justifiable, be in some sense

remunerative, and the distinction to be drawn is rather, I fancy, between such expenditure as the local authority is permitted and such expenditure as it is compelled to incur. Of course, in the latter case the obligation to incur expenditure does not, as a rule, absolutely fix the outlay.

Still with regard to the different capacity in which the local authority acts a clearer division may be drawn than in any other way. Thus in respect certainly of the first four columns of outlay of my Tables I or II, *i.e.*, the cost of pauperism, lunacy, crime, and, where school boards exist, of education, we have the local authority acting simply as the agent of the national will, and discharging a function entrusted to it by statute, doing for the central executive a portion of the work of government within circumscribed areas. This work being entrusted to the locality, not because its proper execution is no concern of the State collectively, but because it is believed, with more or less truth, that the advantage of local knowledge and the stimulus of local interest secured by making the whole or a portion of the charge local in its incidence, will counterbalance the loss of uniformity.

On the other hand, although we have under, and mixed up with the other heads of local expenditure to some extent, a common obligation to maintain the Queen's highways and make certain provisions for the protection of the public health, yet the vast proportion of the outlay is a voluntary one, each special locality consulting its own needs, and only deriving from parliament such power and authority as will enable it to charge its enterprise on the local taxes of the area for which it acts.

Nearly one-third of the cost of what is collectively called local government falls in the former or involuntary, and two-thirds in the latter or voluntary category, or in round numbers, of the 41,900,000*l.* now spent locally, 14,700,000*l.* is really for duties of general government entrusted to local agency, and 27,200,000*l.* for local enterprises co-operatively undertaken under the sanction of parliament by local authorities, rather than as might have been the case by voluntary associations of individuals.

This classification is no doubt an extremely rough one, and although I have tried to some extent, where information is forthcoming, to allocate the large item of interest and repayment of debt to each class with which it seemed connected, it is very probable this is not completely done. While it may very properly be contended that a certain amount of sanitary outlay, especially on the officers, rendered needful by the Public Health Act, the cost of registration, vaccination, and so forth, is no voluntary expenditure prompted by a mere local need, and that a large share of the cost of roads in the country, and to a less extent in the urban districts,

is necessitated by considerations of national expediency, and ought not, therefore, to appear in the second category. However this may be, I would call to mind the extent to which this may on the other hand be partly balanced by the excess of expenditure now optionally incurred in many districts in respect of pauperism. Beyond the sums which would be requisite to discharge the bare obligation to relieve the destitute imposed by the poor law, many localities have voluntarily added to their burdens by a lavish distribution of out-door relief, not only unnecessary but most hurtful to society at large.

Whatever may be the approximate accuracy of such a division of local expenditure into outlay required for the general welfare and protection of the whole community, and disbursements which have been aptly described as merely profitable investments of local capital for local objects, it is, I would submit, at least more nearly true than that into remunerative and non-remunerative outlay. In the last report of the Local Government Board, I see that to the former of these heads is credited an expenditure of 20,000,000*l.*, and to the latter 16,000,000*l.*, these sums referring however to an earlier year than that with which I am now dealing. Some notion of the incongruity of this division may be gathered from such facts as that, in the city of London and the municipal boroughs the cost of public works is regarded as non-remunerative, while the same item in the case of other metropolitan and of urban sanitary authorities is held to be remunerative; or again, that expenditure on county bridges should appear in the non-remunerative, and the cost of all other bridges and roads in the remunerative category.

The grievance of the ratepayer which has been most strongly pressed, lies chiefly in the involuntary local taxes to which, under our system of local rating, he is made subject, and with the distribution of which he is necessarily to some extent restricted by central or statutory authority; and although the increase in the voluntary expenditure of our towns has been very much greater, it has not provoked quite the same resistance, as it has in most instances been caused by a capital outlay for works of specific convenience and in everyday use, while the incidence of the graded sanitary rate has at least to some extent equalised the incidence of the charge. It is still, however, objected even to this department of local government, that needless extravagance often takes place, that a vastly increased local debt has been accumulated, that the complex array of independent and conflicting authorities unnecessarily multiplies officials and their salaries, and that frequently permanent works are executed at the cost of temporary occupiers rather than the owners of house property. There is much force in

some of these assertions. There may be good arguments advanced in certain cases to strengthen the last complaint, but there is some force in the reply that though such a work as sewerage for example is really a part of the expenditure requisite to make houses habitable, and therefore a capital outlay which the owner should undertake, yet were this expenditure effected by him, the interest of the sum so expended, together a yearly quota to defray the annual consumption of capital which is going on, would usually be paid in the form of rent by the occupier, instead of as now in the rates on his dwelling, so that practically the charge would fall where it now does.

There have often been comparisons drawn between the aggregate pressure of local burdens in different places. So far as such contrasts apply to those urban districts where great discretion and latitude exist as to the optional undertaking by the local government of matters elsewhere left to private enterprise, it is needful to see that the "local government," the cost of which appears in the respective local budget, means, as it very rarely will do, the same thing. In one place the municipality supplies water or gas, in another a private company performs this function, which is, of course, equally paid for by the citizens but not entered among their local burdens. This consideration is too often ignored in contrasting town and country burdens, duties which fall on the rates in the first case being equally defrayed from private funds in the second. The diversity of objects of local taxation thus prevents reliable comparisons. In Table V, I have tried to show even in the five largest cities of England how great a divergence of the apparent cost of local government is thus effected. Thus while the population of the metropolis would appear to be governed at a cost somewhat under 3*l.* a-head, in Birmingham no more than 1*l.* 14*s.* 5*d.* per head appears to be expended, while in Manchester, where the corporation undertakes varied functions, the charge runs up to 5*l.* 4*s.* per head.

The irregularity and want of coincidence in local areas, and the absence of geographical grouping in some of our local returns, renders it difficult if not impossible to show the relative outlay for all local objects, or for special heads of local expenditure in each district, as, thanks to the completeness of the poor rate returns, can be done as regards the relief of the poor; while the fact of the usual divergence between poor law and municipal limits renders one portion of this table an estimate only.

It is, however, noteworthy how greatly local expenditure, as to its chief heads, is concentrated in certain districts, how largely its cost depends on the density and the wealth of populous centres, the former creating local needs which can be best effected at the

common charge, and the latter facilitating local enterprises for comfort or convenience of considerable magnitude.

Thus, in Table V, it would appear that putting on one side all maritime and purely exceptional local expenditure, five great "towns," occupying but $\frac{1}{327}$th part of the area of England, but containing more than one-fifth of her population, possess about one-fourth of the property rated to local taxes, return a local expenditure which forms more than one-third of the entire similar outlay throughout the country, and acknowledge a liability for more than one-half of the whole local indebtedness. It may be roughly estimated that the expenditure of their poor law authorities exceeds one-fourth, of their municipal and sanitary authorities, two-fifths, and of their school boards almost exactly one-half of the whole outlay of such bodies.

I have endeavoured to ascertain how the cost of pauperism and crime is distributed geographically, these being two of the most important heads of compulsory local expenditure. The fact that the areas under the same name—such as counties—are really different, prevents any accurate combination, but, as a rough approximation, I think it may safely be stated that in the denser and more wealthy districts crime is heavier than in rural localities, while as a rule pauperism is in the country a heavier charge than in the towns.

Thus, taking the five most populous areas or counties, viz., the Metropolis, Lancashire, the West Riding of Yorkshire, Staffordshire, and Warwickshire, of which 86 per cent. of the population is urban, an expenditure of nearly 3,000,000*l.* is incurred in poor relief and about 2,000,000*l.* in the cost of repressing crime, the charge per head on the inhabitants being a little over 10*s.* 6*d.*, of which poor relief absorbs about 6*s.* 3*d.* and crime about 4*s.* 3*d.*

On the other hand, contrasting these areas with the five counties of Lincoln, Norfolk, Cambridge, Huntingdon, and Northampton, only 34 per cent. of whose population is urban, the charge for poor relief appears to be 553,000*l.* as against 149,000*l.* in respect of crime, together giving an aggregate burden of 10*s.* 3*d.* per head, of which in this case pauperism claims 8*s.* 1*d.* and crime only 2*s.* 2*d.*

These data might be followed still further, and it might be shown for example that taking roughly the large divisions of the country for census purposes, and putting on one side the metropolis, the circumstances of which are exceptional, we have in the eastern, south-midland, and south-western divisions, the smallest percentage of urban population accompanied by the highest ratio of pauperism, and the lowest ratio of crime (as indicated by the number of prisoners in custody), while in the North-Western, Yorkshire, and West-Midland areas, we have the greatest percentage of urban

population, the lowest pauperism, and the highest crime. While in the counties of the first group the cost of poor relief per head of the population in 1874 was 8*s.* 8*d.*, 8*s.* 5*d.*, and 8*s.* 3*d.*; in those of the second it only reached 4*s.* 4*d.*, 4*s.* 5*d.*, and 4*s.* 7*d.* per head.

Efforts to analyse the varying cost of these branches of local government are very tempting fields of research, but most attempts, except in relation to pauperism, have to be postponed till that happy day arrives when we have more accuracy, completeness, and coincidence in our local statistics. I would, therefore, leave this branch of the subject, only remarking on the somewhat curious fact that, glancing through the poor rate returns for 1874-75, it would appear that in round numbers the same sum, 1,589,000*l.*, was expended in poor relief within the 75,000 acres of the metropolitan area with its 3,252,000 inhabitants, as was required for this branch of local government in the six northern counties of England (Northumberland, Durham, Cumberland, Westmorland, Lancashire, Cheshire, and Yorkshire), which stretch over an area of 9,249,000 acres and contain 7,198,000 inhabitants.

IV.—*Number of Local Authorities.*

When we turn from the attempt to note the distribution of the cost of English local government, we are immediately confronted with the perplexing ingenuity of complication in the local machinery employed.

The number of separate local authorities whose accounts are abstracted in the returns to which I have alluded, will be seen from Table IV to amount to 12,336. There is in the case of boroughs a duplication to some extent, from their making returns both in their sanitary and their municipal capacity, but, on the other hand, we have no assurance that there may not be in some quarters authorities not here accounted for, and we know that by this time probably twice as many more school boards as those whose accounts are here given have sprung into existence, while annual additions are rapidly being made to existing urban sanitary districts.

It is difficult to classify these varied bodies. We have, however, first of all four series of authorities existing everywhere. Those four are poor law, county or municipal, sanitary, and highway authorities, while outside of this general arrangement we have the whole number of exceptional areas, boards, and authorities which are not established generally but only arise to meet particular local wants.

Of the four general divisions of the country the two first are alone charged with those tasks of general government which I endeavoured to distinguish from ordinary local duties. There is,

however, no relation between the areas of these two classes of authorities, who between them expend about 14,500,000*l.* annually.

There are now, I believe, 650 poor law unions constituted; the guardians charged with their administration number, or numbered at a recent date, as stated by Dr. Farr to the Select Committee on Local Boundaries, 27,616, of whom 7,004 are *ex-officio* guardians. These bodies are charged, besides a variety of incidental work, with the administration of relief to an average of perhaps some 700,000 paupers daily throughout the year, and to aid them in the work they employ the paid services of a little army of 18,549 officials.

County and municipal work is carried on in 64 county and 229 borough areas. The number of persons engaged in the task of county government in quarter sessions, would appear from a parliamentary return issued in 1869 to number 11,963, that is assuming all magistrates on the roll to act. Boroughs were stated to the Committee on Boundaries to possess 7,325 rulers in the shape of magistrates, aldermen, and councillors. It must not, however, be assumed that these two jurisdictions are wholly independent of each other, for municipal authorities do not in all cases discharge analogous duties, but frequently relegate certain tasks connected with the administration of justice, prisons, and police to the county authorities of their districts.

Thus, of the 229 boroughs only about 167 claim the right to a separate police force; a right, to my mind, still most unwisely conceded, when it gives a spectacle of nearly 60 so-called forces of less than 10 men each. Only 97 boroughs have quarter sessions of their own, and only 35—and these curiously enough often of the most insignificant dimensions—the luxury of a separate prison. Thus, while there were at the last census 6,569,000 persons resident in boroughs, no more than 2,906,000 of these had gaols of their own, a fact which is not unworthy of consideration, when it is maintained in some quarters that the absence of prison administration will be destructive to the dignity of local government.

The special administration of the metropolitan police should be included in the list of authorities dealing with police and general government. It is questionable whether it is technically right to include these officers as a "local authority" as, although their accounts are included in the local budget, they are really officers of the Home Office, managing a Government force which, in respect of the original locality of its origin, is still in part paid by what is virtually a sort of subvention contributed by the local to the central authorities.

The sanitary division of the country comes next with 921 urban, 550 rural, 42 metropolitan, and 29 port authorities. Boroughs are included a second time in the urban class.

Intimately connected with this division is that for highway purposes, a division in fact identical as regards all urban sanitary areas, and therefore as regards two-thirds of our population. This is not, however, as yet the case in the country, where the rural sanitary authority—that is the guardians, less those resident in the towns of each union—have no highway functions. These are entrusted, over a rateable area forming 30,770,000*l.* of the 55,002,000*l.* which lies outside of urban sanitary districts, to 354 boards; 57 other boards exist in South Wales, and the rest of the highway work of the country is transacted under the old law in 6,303 separate parishes; while at the date of the last return there was an independent road management vested in 651 turnpike trusts.

The bodies I have named are accountable for some 34,714,000*l.* or more than four-fifths of the cost of local government. The remainder is due to the extent of 3,797,000*l.* to 68 harbour and 63 other maritime authorities, to the extent of 2,276,000*l.* to 1,052 school boards, and a balance of 1,090,000*l.* is scattered throughout the country under the auspices of 567 burial boards, 231 lighting, 211 drainage, sewer, and embankment, and probably 300 other similar authorities.

What the number of members of these various boards amounts to I have no means of ascertaining. It is unquestionably true, however, that they add a large quota to those I have named. I see by the last census that 51,438 persons were returned as officers in the employment of the local governments of the country, and a careful endeavour to ascertain the amounts paid in salaries by local authorities leads me to place that item, so far as shown in the published accounts, at full 2,400,000*l.* per annum. The magnitude of these payments to the highly paid officials of certain corporations, frequently contrasts most strangely with the comparatively small remuneration of officers of the Imperial Government; and the town clerks of such cities as Manchester and Liverpool receive salaries much larger than that enjoyed by the President of the Local Government Board himself, or the permanent Under Secretaries of State.

V.—*Conclusions.*

I have been prevented by want of time from carrying my attempted analysis of local government so far as I have wished, especially I regret the necessity of omitting some considerations on the magnitude, the growth, and the consolidation of local debt, a subject so intimately connected with the cost of local works. It is, however, in itself so large and pressing a question as to lead me to hope to see it dealt with separately and in abler hands.

It remains only for me now to sum up the considerations I have tried to lay before you.

I have endeavoured to investigate and contrast the sources of information with respect to local finance now and lately available. I have pointed out their apparently grave defects, and I would suggest as the primary step of all attempts to reform local administration, that a more uniform form of accounts—a thorough official audit—and a consistent series of returns for a single period be annually required from every local body, as an absolute condition of its right to levy local taxes; and that the information so obtained, as well of the various objects of local outlay as the several sources of local revenue, be clearly and systematically laid before parliament, with as much care as is expended in bringing home to the taxpayers the statistics of imperial finance.

To press such a step as this is clearly within the function of this Society. It could not but be productive of great gain to all who desire to see a sound and economic system of local finance. To engage in any attempt at reform without such data, would be like entering on a modern war without the most useful adjunct of modern military knowledge—a clear and consistent series of maps and plans of the country in which we are to operate.

But further, I have tried to trace the heads of local expenditure which have most developed since 1868, and I have endeavoured to give in some sort a rough, and I fear in many points a rather crude sketch, of the distribution of certain important heads of local outlay at the present time, a sketch which tended to impress me with the value of keeping distinct the twofold functions of local authorities, that of the agents of the State carrying out in local limits national duties affecting the common weal, and that of undertaking the regulation and execution of purely local enterprises of special benefit to particular communities.

Lastly, I have glanced very briefly at the medley of governing bodies, areas, and officers which go to make up our system of local administration. And here I would ask the most earnest consideration for the possibility of reducing the cost of local government by greatly simplifying its machinery, by devolving on district and on county authorities, as circumstances prescribe, the several local functions which have to be carried on. Adopting as the unit some such area as the union and bringing that area into harmony with county boundaries, it would present a district within which it would be perfectly competent to transact all highway, sanitary, and poor law work, embracing such special local needs as are now discharged in lesser areas by minor bodies such as lighting and burial boards. These districts, apart from the separate organisation of the larger municipalities, might then be drawn together for common action,

within their county limits, by a strong representative provincial authority, charged, as it might most economically be, with all work not necessarily magisterial, and therefore retained in the hands of officers of the crown.

This is not the place to dwell on the general, social, or political advantages of such a step, but I hope I have shown enough to claim assent for a proposal to reduce to something like order, consistency, and uniformity, the tangled scheme of local administration now prevailing in England. I am very conscious how hurried and imperfect my present paper is; I hope, however, by discussion to draw forth the opinions of others more competent to advise in this matter, and to be corrected where my data fails to give an accurate presentation of facts.

There are very many other points in this large question of very special interest, the questions of the mode of raising local revenues, and the better distribution of local and imperial duties, a discussion on local government might provoke, but I desire to-night only now to call attention (as I claim no originality in doing) to the want of system, and the urgent need for clearer statistical data, and more uniform and effective consolidation, with the consequent strengthening of local institutions, and certain economy in the cost of local government.

APPENDIX.

TABLE I.—*Showing the Distribution of the Chief Heads of Local Expenditure in* 1867-68.

[000's omitted.]

Authorities.	On Pauperism.	On Lunacy.	On Education.	On Police and Crime Repression.	On Traffic, including Roads, Streets, Bridges, Ferries, Markets, Harbours, &c.	On Public Works, Local Improvement, and Sanitary Outlays.	On Other Objects.	On Interest and Repayment of Debt.	Total Expenditure.
	£	£	£	£	£	£	£	£	£
Poor Law	7,419,	657,	34,	—	—	51,	609,	208,	8,978,
County	—	245,	—	1,567,	53,	—	170,	284,	2,319,
Town (including municipal boroughs, improvement commissioners, and local boards)	—	—	—	707,	1,050,*	3,103,	815,	1,342,	7,017,
Metropolitan (including vestries, Board of Works, City of London and Police Commissioners)	—	—	8,	945,	803,	2,756,	334,	1,163,	6,009,
Road (including highway authorities and turnpike trusts)	—	—	—	—	2,147,	—	—	312,	2,459,
Maritime (including harbours, pilotage, and light dues)	—	—	—	—	1,723,	—	—	1,040,	2,763,
Miscellaneous (including burial boards, sewer commissions, drainage, market and fair, bridge and ferry, and lighting authorities)	—	—	—	—	158,	308,	—	226,	692,
Total	7,419,	902,	42,	3,219,	5,934,	6,218,	1,928,	4,575,†	30,237,
Percentage of total outlay	24·5	3·0	0·1	10·6	19·6	20·7	6·4	15·1	100

* This sum is estimated from the amounts distinguished as expended on streets and roads in later returns.

† This total includes interest and repayment of debt in the case of poor law and local board authorities, distinguished here, but not in Mr. Goschen's return.

TABLE II.—*Showing the Distribution of the Chief Heads of Local Expenditure in* 1874-75.

[000's omitted]

Authorities.	On Pauperism.	On Lunacy.	On Education.	On Police and Crime Repression.	On Traffic, including Roads, Streets, Bridges, Ferries, Markets, Harbours, &c.	On Public Works, Local Improvement, and Sanitary Outlay.	On Other Objects.	On Interest and Repayment of Debt.	Total Expenditure.
	£	£	£	£	£	£	£	£	£
Poor Law	6,681,	859,	34,	—	—	82,	662,	267,	8,585,
County	—	553,	—	1,697,	58,	—	235,	411,	2,954,
Town*	—	17,	—	832,	1,727,	6,740,	1,697,	3,650,	14,663,
Metropolitan*	—	8,	6,	1,220,	1,124,	2,018,	411,	1,533,	6,320,
Road*	—	—	—	—	1,990,	—	—	202,	2,192,
Maritime*	—	—	—	—	1,708,	—	—	2,089,	3,797,
Miscellaneous†	—	—	—	—	65,	755,	—	270,	1,090,
School Board‡	—	—	2,159,	—	—	—	—	117,	2,276,
Total	6,681,	1,437,	2,199,	3,749,	6,672,	9,595,	3,005,	8,539,	41,877,
Percentage of total outlay	16·0	3·4	5·2	9·0	16·0	22·9	7·1	20·4	100

* Authorities mentioned are the same classes as in Table I.

† The same as in Table I, with the addition of rural sanitary authorities.

‡ New class of local authority.

TABLE III.—*Showing Increase or Decrease under each Head of Expenditure,* 1868-75.

[000's omitted.]

Authorities.	On Pauperism.	On Lunacy.	On Education.	On Police and Crime Repression.	On Traffic, including Roads, Streets, Bridges, Ferries, Markets, Harbours &c.	On Public Works, Local Improvement, and Sanitary Outlay.	On Other Objects.	On Interest and Repayment of Debt.	Total Expenditure.
	£	£	£	£	£	£	£	£	£
Poor Law	−738,	+202,	—	—	—	+ 31,	+ 53,	+ 59,	− 393,
County	—	+308,	—	+130,	+ 5,	—	+ 65,	+ 127,	+ 635,
Town	—	+ 17,	—	+125,	+677,	+3,637,	+ 882,	+2,308,	+ 7,646,
Metropolitan	—	+ 8,	− 2,	+275,	+321,	− 738,	+ 77,	+ 370,	+ 311,
Road	—	—	—	—	−157,	—	—	− 110,	− 267,
Maritime	—	—	—	—	− 15,	—	—	+1,049,	+ 1,034,
Miscellaneous	—	—	—	—	− 93,	+ 447,	—	+ 44,	+ 398,
School Board	—	—	+2,159,	—	—	—	—	+ 117,	+ 2,276,
Total increase	—	+535,	+2,157,	+530,	+738,	+3,377,	+1,077,	+3,964,	—
,, decrease	−738,	—	—	—	—	—	—	—	—
Net total increase	—	—	—	—	—	—	—	—	+11,640,

TABLE IV.—*Local Authorities Making Returns of their Accounts.*

CLASS I. Under 23 and 24 Vict., cap. 51. Collectively Given in One Abstract Annually by the Local Government Board.		CLASS II. Abstracts Separately Issued by the Local Government Board.		CLASS III. Rendering Independent Accounts.	
Names of Authorities.	Number Last Returned.	Names of Authorities.	Number Last Returned.	Names of Authorities.	Number Last Returned.
Metropolitan Local Management	41	Poor Law (number of parishes 14,895)	647	City of London (certain accounts only)	1
Urban Sanitary	921			Metropolitan Police Commissioners	1
Rural ,,	550				
Port ,,	29	County	64	Metropolitan Board of Works	1
Lighting and Watching	231				
Bridge and Ferry	41	Borough	226	Mercantile Marine Fund	1
Market and Fair	25				
Harbour	68			Pilotage	62
Church	232	Highway	411 and 6,303		
Drainage and Embankment	158			School Boards	1,052
Sewer Commissions	53				
Burial Boards	567	Turnpike	651		
	2,916		8,302		1,118

TABLE V.—*Showing Local Expenditure of Large Cities.*

[000's omitted.]

Places.	Population, 1871.	Rateable Value, 1875.	Expenditure by the following Authorities.					Rate of Expenditure per head.	Total Debt of foregoing Authorities.
			Poor Law.	Municipal and Sanitary.	Educational.	Burial.	Total.		
		£	£	£	£	£	£	£ s. d.	£
Metropolis	3,254,	21,088,	1,723,	6,397,	895,	56,	9,071,	2 15 9	22,688,
Liverpool	493,	2,940,	176,	1,247,	51,	20,	1,494,	3 – 7	4,455,
Manchester	351,	1,972,	117,	1,667,	26,	16,	1,826,	5 4 –	4,648,
Birmingham	344,	1,284,	94,	420,	74,	4,	592,	1 14 5	1,067,
Leeds	259,	919,	85,	795,	90,	5,	975,	3 15 3	3,456,
Total	4,701,	28,203,	2,195,	10,526,	1,136,	101,	13,958,	3 – –	36,314,

TABLE VI.—*Showing the Periods of Account as Respects each Local Authority.*

Authorities.	Dates at which Year of Account Referred to ended for the purpose of		Remarks.
	Mr. Goschen's Statement, 1868.	Local Government Board Return, 1874-75.	
Improvement Commissioners	Varied dates between 31st May, 1866, and 1st June, 1867	Varied dates between 31st May, 1874, and 1st June, 1875	Improvement Commission and Local Boards, now included under urban sanitary authorities
Local Boards			
Metropolitan Vestries, &c.			
Sewer Commissions			
Drainage			
Lighting and Watching			
Markets and Fairs			
Bridge and Ferry			
Harbours			
Burial Boards			
Highway authorities in parishes	25th March, 1867	25th March, 1874	Entered collectively as Highway "Boards" in Mr. Goschen's statement, the date given being 25th March, 1867; the accounts of Highway Boards, properly so-called, were, by 27 and 28 Vict., cap. 101, altered so as to end at 31st December
Highway authorities in South Wales			
Highway districts under 25 and 26 Vict., cap. 61, and 27 and 28 Vict., cap. 101	31st Dec., 1867	31st Dec., 1874	
Turnpike	31st Dec., 1867	31st Dec., 1874	—
Poor Law	25th March, 1868	25th March, 1875	—
Municipal	31st August, '68	31st August, '75	—
County	29th Sept., '68	29th Sept., '75	—
City of London (Sewer Commissioners' Account)	„ '68	„ '75	—
(City Estate Account)	31st Dec., '68	31st Dec., 1875	
Mercantile Marine Fund	„ '68	31st March, '74	—
Pilotage	„ '68	31st Dec., '74	—
Metropolitan Board of Works	26th March, 1869	„ '74	Date altered
Metropolitan Police Commissioners	29th „ '69	31st March, '75	„
Church	[Easter, 1867]	[Easter, 1875]	The church rate accounts were omitted from Mr. Goschen's statement
Rural sanitary	—	25th March, 1875	These are wholly new authorities since 1868
Port „	—	29th Sept., '75	
School Boards	—	„ '74	

Discussion *on* Captain Craigie's Paper.

Dr. Farr said he had listened with very great interest to the paper, and the Society was much indebted to Captain Craigie for pointing out the great defects in local taxation. It was clear now that all statistical returns ought to coincide, and there was no reason why they should not. He thought that there ought to be a simpler system of local government. In every county there were eight or ten different kinds of boards, that might all be consolidated. There was one advantage, perhaps in creating a new body such as an education board, because such a board would go into the matter of education with much greater zeal than the old bodies would; but substantially he held that at Manchester, for instance, if the municipal body was good for anything it ought to manage the poor and every administration of that kind. There was one body, the board of guardians, which had a district that did not coincide with the municipal limit. The same was the case in Birmingham and other large towns. It was desirable to constitute out of these local bodies one great county board, as Captain Craigie had put it, to do a great deal of the business, leaving the rest to the municipalities and the unions. There was no necessity for boards of guardians and municipal councils in the same place; but there ought to be a uniform administration as well as a diminution of the expenditure, to which, however, he did not attach so much importance as Captain Craigie did. They were too much apt, as men of business, to concentrate their minds on the figures that represented expenditure only. What they wanted to know was what good was obtained in return for the expenditure. Unfortunately they were unable to show in figures, what enormous advantages were obtained from the poor law expenditure. He maintained that, judiciously administered, it was an insurance of life and property; and he held it was one of the great causes of disturbance on the continent of Europe that they had no such institution as the poor law of this country. It was quite clear that a country had an enormous advantage in having good roads. There was an annual expenditure of 3,000,000*l.* on roads, and more than 3,000,000*l.* of good was obtained for the money expended. He thought it was a question well worthy the attention of young statists not only what was spent but what was obtained in return for the expenditure. He wished to express particularly his thanks to Captain Craigie for his paper, and to invite all the members, particularly the younger ones, to consider how best to improve the local government of the country, which ought always to be in harmony with the central government.

Mr. Palgrave, after expressing his thanks to Captain Craigie for his valuable paper, said he was very much struck in listening to it with the great advance that had been made since he (Mr.

Palgrave) had dealt with the subject four or five years ago. He was very glad to find that Captain Craigie was now able to obtain far closer information as to the different heads under which local expenditure was carried out than he (Mr. Palgrave) had been at that earlier period. This he considered a great step in advance, and he thought that in some respects it was due to the labours of the Society in that direction. The result of his investigations had been entirely to confirm him in the opinion to which Dr. Farr's remarks uniformly tended, namely, the necessity of having one central authority in these matters. In this country there was a vast number of elections for various bodies. From experience of the district where he resided, he found it was absolutely impossible to get people to attend in order to vote on so many different occasions and for so many different persons. They were altogether puzzled in making up their minds to vote. They might vote on the first and second occasion, but on the third or fourth it was almost impossible to excite any proper interest in the matter. The result was that those offices which ought to be in the hands of sensible and judicious persons, became, as it were, the prey of anybody who would take the trouble to stand for them. He considered that the deterioration in the local authorities which was going on was partly the effect of these vastly multiplied elections; and he trusted that one result of Captain Craigie's paper would be an effort on the part of the Society and parliament towards simplifying our authorities, and towards establishing one central government for each municipality, to embrace in its functions all the separate offices, which ought to be simply committees of one central body.

Mr. Metcalfe gave some details respecting the district in which he resided (New Barnet), illustrating the extravagance in local expenditure that was very often practised.

Mr. T. R. Wilkinson, President of the Manchester Statistical Society, said he had no intention of offering any remarks, but one observation of Dr. Farr's called for some remark from a Manchester man. Dr. Farr had said that it would have been better if the education board had been a part of the municipal government. Speaking for himself, he believed the time would come when the education board in all municipalities would be a committee of the municipality; but it was essential in trying so great a scheme as the education scheme was, that an independent and separate board should be established. In his own part of the country school boards had done their work well and satisfactorily; at the same time he thought that by-and-bye the same men who had taken an interest in education, and who had been on the school board, would be willing to enter the corporation, and possibly help to improve somewhat the tone of the municipality. He did not sympathise with the remarks that had been made as to centralisation. There was nothing that demanded more attention than the cultivating and fostering of a local system of local self-government. What was the parliament of England fifty years ago? One could not but look back with humiliation on the fact of England having then such a representative body; and it

was largely owing to the new growth of local self-government that the parliament had been reformed and altered. He had felt very great interest in listening to Captain Craigie's paper, which had afforded him considerable pleasure and much information. He did not hesitate to say that the corporation of Manchester had done work which had not been surpassed by any municipality in the world, even in the palmiest days of the old Italian republics.

Dr. Farr said he had been rather misunderstood about the education board. He thought that in the exceptional case referred to, perhaps it would be desirable to create a special body to introduce something so new as a system of education; but he agreed with Mr. Wilkinson that in the end those boards would become unnecessary, and would become consolidated and incorporated with the other boards.

Mr. Lumley, Q.C., said that Captain Craigie's paper had dealt with a subject which required a vast deal of attention, namely, the introduction of the local taxation returns in a uniform statement, but he must point out that it was only within a very few years that there had been anything like an opportunity of having this done. It should be remembered that these returns were received from parties without any public department having any control over them. The poor law board as formerly constituted undoubtedly obtained most accurate poor rate returns, but he thought it right to say that these returns had been brought to their present rate of perfection after a great deal of experience and manipulation, extending over a very long series of years. The result testified to the accuracy exercised on the part of the officers of the department from which they emanated, and the care on the part of all the local authorities who were interested in the matter. The poor law returns were made by that board up to 1872. It was true that the Home Office had certain returns forwarded to them, but no precise functions were cast upon the Home Office to present these returns in anything like a uniform or accurate state. Since the time when the returns were handed over to the local government board and that board had been established, that department had been anxious to present them in the most uniform state possible. He did not say they were anything like perfect at present; but he thought it must be admitted that there was a vast improvement during the few years they had been under the new management; he hoped that the progress that had been made would be continued, and that they would reach as much perfection as could be attained, looking at the miscellaneous bodies that made returns, the instruments that had to be used in forwarding them, afterwards in tabulating them, and the very imperfect amount of control that could be exercised over many of these independent bodies. These returns were now, for the most part, made up to Lady Day. Dr. Farr had very properly asked, "Why not make them up to correspond with the year?" There seems to be no reason why this should not be so. It seemed natural to take all the accounts from the 1st January to the 31st December; but the reason why they were

made in the present form was because they were made to correspond as nearly as possible with imperial taxation; and for some reason or other, perhaps it might be on account of the time of the year at which parliament met, the Treasury insisted upon their being made up to the 1st of April. To show the difficulty that had attended the making of these returns, it is to be remarked that it was only within the last two years that the local boards of the country had been elected simultaneously. Previous to that time all the local boards of the country were elected at different periods of the year, and their accounts were made up accordingly; but now there was a uniformity in the time of their elections; and it was to be hoped that still greater improvements would be made in that way. Dr. Farr had also asked, "Why not consolidate the different local bodies?" There were a great many reasons why that could not be done. Dr. Farr curiously illustrated his observations by referring to the city of Manchester, and asked, "Why not consolidate the districts?" It so happened that the Poor Law Commissioners some years ago formed a union of Manchester, that is of the township of Manchester and divers townships adjoining. It was termed the Manchester Union. That union worked for two or three years, and it was then found necessary to break it up into three or four different parts, because it was too large and there were too many poor to be attended to. The enormous amount of work that has to be done prevents the consolidation of many places into one district, and the adoption of that single action which otherwise is so desirable.

Mr. Cornelius Walford spoke highly of the utility of the coloured chart drawn by Captain Craigie, showing at a glance the cost of pauperism in different parts of the country. He suggested that a chart would be of still greater service if it were drawn out to show the cost of crime and public institutions in different parts of the kingdom, and other great heads of public expenditure, and then, having ascertained the amount of local taxation in this way, the time would soon arrive when large landowners and others who had to pay these charges, would find a remedy for their grievances. He was glad to think that the first plan of this sort had emanated from the Statistical Society.

Mr. Wilkinson, referring to the remarks made by Mr. Palgrave, as to the lukewarmness exhibited by the electors in municipal elections in the district where he (Mr. Palgrave) resided, stated that in Manchester and Salford and the neighbouring towns there was as much interest in the municipal election as there was in the Parliamentary election, because it was felt that the town council was the proper place to which men should be sent in order to train them for parliament.

The President said that many years ago Lord Palmerston, when Home Secretary, wished that the whole of the administration of the English police should be centred in the Home Office. He (the President) was at that time one of the members for Lancashire,

and he and other members of that part of England talked the subject over, and they did not agree with his lordship, and he was given to understand that many members would not vote for it, as there was a strong feeling in favour of local self-government. He quite agreed that local self-government ought to be as economical as possible; and there were cases where people, who were new to the business of such local government, might be unable all at once to manage it cheaply; but at Manchester he knew that the expense of pauperism had been very much reduced, which was due to the experience of half a century. He did not see how people who had much private business to do could find time to devote to all these public matters. He was in favour of the present system continuing, with modifications.

Dr. Guy could not agree with Dr. Farr that the poor law was a cause of stability and prosperity in a country. With regard to the question of crime, he thought that the extreme facility with which the mendicant thief gained access to the "union hotels"—for he could not call them by any better name—was one of the leading causes of most of our petty offences and many of our worst crimes. He had been quite horror-stricken at the accounts given by a friend of his of the extraordinary dirty habits and indecencies of this class of paupers as compared with the deserving poor, from whom they ought to be separated. This mendicant thief class were those who went about pretending they could not get work, and by this means obtained money, and afterwards persecuted the rural populations by their depredations. The poor law, as administered in England, was, he considered, the greatest curse that had ever been inflicted on a country. It ought not to exist any longer, or if it did, its evils should be, as far as possible, counteracted. The population of our workhouses should be separated into sections, so that the lunatic, the imbecile, and the idiot should be transferred to institutions properly planned for their reception, while the mendicant thief who went into the union and died there should be separated from the few poor properly so called. He hoped that one of the first effects of an improved local administration would be to bring about a diminution of these "union hotels," and a disintegration of their ill-assorted populations.

The Hon. Mr. Washburn, after expressing the pleasure it afforded him of being present at this and the previous meeting, and listening to papers of such rare merit and excellence, said he could not be supposed to understand much of these matters; but this much would he say, that the English-speaking race on both sides of the Atlantic were endeavouring to make the world happier and better; but while it was necessary to look carefully at the cost of the luxuries of civilisation, it was also becoming to see what was obtained in return. He was particularly pleased with the reference that had been made to the school board. He had for nine years been connected with the school board at Boston, United States, and he could say that there was no expenditure which the people of America made with more pleasure than that of the taxes imposed

upon them for education. The city of Boston had a population of 350,000, not including the outlying districts, and as chairman of the finance committee he was able to state that in one year the expenditure on salaries and cost of school houses amounted to $1,600,000, or 320,000*l.*, and of that sum about $1,000,000 were expended on instruction. This might appear a large sum, but it was considered that the money was well spent. In the legislature of Massachusetts, as well as in other States, there is a constant call for a commission for the introduction of pure water, for the perfection of drainage, the making of good roads, and all these things that tended to the comfort and happiness of the people: but while it might be they were necessary, at the same time it was needful to look at the expenditure incurred in carrying them out.

The Rev. Mr. Doxsey corroborated the remarks made by Dr. Guy as to the unsatisfactory state of matters in the union workhouses. He thought that if the receipt side of the account were looked at instead of the expenditure side, the question of local taxation would be unravelled.

Mr. Chubb said it was well known that large sums were raised by different local bodies, generally for their improvements. It was always the case that these improvements had to be examined into very closely by the Local Government Board in London before money was allowed to be raised for them; but these sums were for the most part raised by the different bodies themselves, and in a form which did not admit of their being taken up by people generally. They were still raised in a form which admitted of loans generally being taken only by societies or large monetary bodies. Of course, he did not for a moment advocate anything in the way of centralisation in the form which had just been objected to; but it struck him there was a form of centralisation which might be of great advantage if the local bodies could only be brought to a common centre, so that their loans could be made available for the common body of investors. Probably there was no greater difficulty at the present time than in finding good investments for money; local bodies afforded the best possible investment; and if anything could be devised by which they could be brought more into the general money market of the world, there would be an advantage, not only to the bodies themselves, but also to investors.

The Rev. Mr. Pretyman agreed that returns should be immediately made to the Local Government Board of the proposed expenditure in particular localities. He happened to be a sufferer in a small way from such returns not having been made. He happened to be in a place, near the sea, where there was a beautiful ravine and a piece of green pasture land running down to the sea shore, and it appeared that the speculators in building who wished to increase the "attractions of the town," cut this up into gravel walks, and levied a rate under a private Act by which they were able to borrow money and tax all the ratepayers at whose expense they spoiled the place. This was a matter in which the central authority should

interpose. The chairman had truly said that pauperism was less in Lancashire and the northern counties since 1834. In truth he had been more accurate than he thought he was, for he (Mr. Pretyman) had lately been reading the report for 1834, and it appeared that before 1834 the northern counties, particularly Cumberland and Westmorland, and, he thought, Lancashire, were far more free from pauperism than any other counties, and that in those very counties where pauperism and poor law expenditure were at their lowest, there was by far the least amount of discontent, and tumult, and riot, and incendiarism, in the years 1830 and 1831; whereas in those counties where poor law relief was given in the most liberal and "benevolent" manner, there was the highest degree of disturbance and riot, violent and angry discontent, and mutinous insubordination. A remark had been made that evening to the effect that poor laws were a sort of insurance upon property, a method of allaying discontent and keeping the poor quiet. That remark was made by Mr. Forster a year ago, and he was sorry that such a remark had been made by such an authority. He totally denied the connection between the poor law and the absence of discontent. Where the poor laws were most "liberally" and fully administered, there was the greatest amount of discontent and incendiarism. Mr. Forster had made the observation that in those countries where there were no poor laws there had been disturbances and revolutions. But those revolutions were not caused by the absence of poor laws, but by political disputes and other circumstances into which he could not then enter. He had lived in France for a year and a-half, and although there were no poor laws, the absence of pauperism and mendicancy there was very remarkable. There were disturbances occasionally there, but they arose from political feeling. With regard to vagrancy, they had an institution called the Maison de Detention, which was half gaol half workhouse, and it was found to work satisfactorily.

Captain Craigie, in reply, expressed his regret that he had not had a more antagonistic discussion. With reference to the point raised by Mr. Chubb, he had purposely excluded from his paper the mode of raising local taxes, because he conceived it was impossible in a single evening to discuss so large a subject in conjunction with the distribution of local expenditure. He should be glad, if occasion offered, at some future time to touch upon that question, because it was one in which he was more interested than in that of expenditure. He had alluded to the fact that the question of loans was one of paramount importance, and he hoped that the institution of some such county authority as had been talked of would conduce towards the end sought by bringing together the local authorities, and by relieving the pressure of local debt somewhat in the same way as the Metropolitan Board of Works in London, by contracting large debts at a low rate of interest, and then lending from that debt to minor authorities. He believed the rate paid by the Metropolitan Board of Works was only $3\frac{1}{2}$ per cent., which was considerably under the average rate paid by the local authorities of the country. He was glad that the two sides of poor law expen-

diture had been so well drawn out, first by Dr. Farr and then by Dr. Guy. He should like to qualify Dr. Farr's statement that there were great advantages derived from the poor law expenditure. He thought that if the proper object of poor law expenditure in Durham, Lancashire, and other counties was achieved for a sum of 4*s.* per head of the population, there was no occasion for it to be 10*s.* in other parts. He would submit that a great portion of poor law expenditure must be questioned, and he thought that if the reason why one county differed from another in the amount of this poor law expenditure were more narrowly looked into, it would be found that the counties who had a large expenditure were those who, with a short-sighted economy, distributed money in the form of out-door relief. They were very much more heavily taxed than those who adopted the principles of the poor law of 1834. He should have liked, if he had had the opportunity, to construct a larger series of maps. Mr. Wilkinson had referred to the advantage of local self-government. He (Captain Craigie) would be the last to deny it, but he did not think that the advantage of local self-government could be perpetuated by keeping up a multiplicity of local governments. He thought it was perfectly clear that as a population grew more dense, the area of government should be extended, the character and dignity of the local authorities should be enhanced, and the machinery by which the local needs were supplied would have to be improved. He must demur to the strictures made by one of the speakers on the imperial legislature as being so vastly inferior to the parliament of from twenty to forty years ago. He must confess that the parliament of bygone times in England stood very high in his estimation; and he thought the present parliament had no reason to be ashamed of its predecessors. In reference to the question of highway expenditure, he must demur to Dr. Farr's and Mr. Washburn's remarks. A great portion of the highway expenditure of this country was not satisfactory. Great complaints were made sometimes as to the condition of the roads being distinctly and rapidly deteriorating, so that with a larger expenditure there was not a good return any more than from the poor law. He should have asked whether with regard to America, there was the same complication in local authorities as there was in this country. (Mr. Washburn: No; we have not.) Captain Craigie said that in that case the cost of salaries and officials would not be so great. He hoped the Society would not lose sight of the necessity of first of all insisting upon a complete and uniform system of accounts. Mr. Lumley had pointed out how much the Local Government Board had improved the accounts, and how the existing want of control prevented the accounts being rendered. Having been concerned in the promotion of a Bill which went through its first and second reading, and also through committee, to compel this very matter to be done, he did not think that so slight an obstacle as the resistance of one or two municipalities should have stopped the measure. He did not see why the Society should not ask parliament, who gave power to levy every local tax, that a proper return should be made of the disbursement of that tax.

MISCELLANEA.

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I.—*General Results of the Commercial and Financial History of* 1876.

THE following extracts are from the supplement to the *Economist* of 10th of March, 1877:—

"We said at the close of our review of 1875:—'Nothing, however, is more certain than that there cannot be, and ought not to be, any extensive revival of industry over the world until prices and wages of every kind have thoroughly adjusted themselves to a level consistent with profitable returns to capital embarked in the various large fields of production. The year 1874, and still more the year 1875, have witnessed good progress towards this end; and it is apprehended that 1876 will add a third year to the reactionary period rendered inevitable by the excitement, inflation, and extravagance of 1871-73.'

"The year 1876 has in all respects corresponded in character and results to this forecast. It has been a third year in the cycle of reaction and readjustment, and until quite the close of it has been marked by dull and limited trade, restricted confidence, the rigorous application of reduction and economies, lessened wages, and the failure of numberless commercial and manufacturing concerns, unable by the capital, credit, and skill at their command to bear the pressure of adverse times. This description applies with even more force to North America, Germany, Austria, Russia, and Belgium than to this country. In France the dulness has been somewhat less severe, but still marked and wide-spread.

"The harvest in this country in 1876 was not satisfactory. The hot weather of June and July came too late, and the result was a crop of a very imperfect character.

(I).—*Gazette Average Price of Wheat (per Imperial Quarter) in United Kingdom, immediately after Harvest,* 1871-76, *and Total Average Gazette Price of Calendar Years.*

After Harvest.	s.	d.	Calendar Year Averages.	s.	d.
1876	47	–	1876	46	2
'75	46	–	'75	45	2
'74	46	1	'74	55	9
	46	–		50	6
1873	64	2	1873	58	8
'72	58	6	'72	57	–
'71	56	3	'71	56	8
	59	7		57	5

"Thanks to the abundant foreign supplies—largely from California—the average price of the calendar year 1876 is nearly 20 per cent. less than in 1874, and so far the general consumer has been a gainer. The winter of 1875-76, and the spring of 1876, were among the most severe and ungenial of recent years. The fruit crops were generally a failure, and the three months (June to August) of drought caused immense destruction of live stock. The farming interest has suffered greatly in 1876.

"The *Times* (January, 1877) reports:—

"'The *American Fresh Meat Trade*.—The importation of fresh meat from America is rapidly becoming a most important branch of trade, and it is expected that in a short time, when the arrangements of the various steamship lines between New York and Liverpool are completed, the shipments to the English markets will be so extensive as to cause a very sensible and welcome fall in the prices. Experience shows that the quality of the American beef is in no way inferior to that of beef of home growth, and as regards price, it can be sold at a profit to the importers, at rates varying from 2*d.* to 3*d.* per lb. (retail) below those charged for ordinary butcher's meat. With such advantages on its side as excellence of quality and cheapness of price, the American beef is fast making its way; at present the weekly supply which reaches Liverpool is about 600 tons. The greater portion of this is at once dispatched to London, where it is taken by West-end clubs and other leading institutions. The remainder is sent to Birmingham, where the result has been a decrease of 2*d.* per lb. in English beef—Leicester, Nottingham, Sheffield, and other towns.

"'It is curious that in Liverpool and Manchester the demand for the meat is comparatively slight, but this is attributed to a kind of tacit combination on the part of butchers not to encourage the sale of meat which will compete with their ordinary stock, and tend to curtail the large profits which they make out of the latter. Nevertheless, the example of other towns will probably be followed in due course, and in the meantime the importers find such a demand for their meat elsewhere that they have no particular desire to force it upon an unwilling market. Perhaps the most conclusive evidence in its favour is that of the butchers themselves, who, in spite of their disinclination to sell it, are unanimous in pronouncing it to be 'good sound beef.'

"'It appears that the imports of meat, which were commenced fifteen months ago, are now an important feature in the cargoes of the various steamers coming to Liverpool. The largest consignments are brought over in the Guion and White Star steamers, but the American Line, the Inman Line, the National Line, and some others are rapidly taking up the new business. The largest meat chamber is that of the Guion steamer Wyoming, which measures between 25,000 and 30,000 cubic feet, and is capable of holding from 2,000 to 3,000 quarters of beef, with a number of sheep and pigs in addition. The meat is sewn up in canvas to keep it clear of grit and dirt, and is kept a little above freezing point by currents of air cooled by contact with ice, or by chemical means. It will be a relief to householders and heads of families to find that beef as good, if not better, than that sold at 10*d.* and 1*s.* per lb. can be obtained at 7*d.* or 8*d.*'

"The very slow recovery of North America from the commercial distress, which began with the railway panic of September,

1873, is among the most important and instructive facts of the time.

"One of the most interesting and important events in the commerce and finance of 1876, has been the extreme depression and the rapid recovery of the price of silver. Mocatta and Goldsmid, the eminent bullion brokers, report the facts as follows:—

"'The Committee of the House of Commons on silver, under the able presidency of Mr. Goschen, collected much evidence, and presented a report which has become a document of high economical value.'

"The following table shows that the silver sent to the East in 1876 was 11 million pounds, against $3\frac{3}{4}$ million pounds in 1875:—

(II).—*Silver*, 1876-66, *Shipments to East, Bills Drawn by India Council on India, Imports of Silver into United Kingdom, Average Price in London, and Average Rate of Bank Discounts.* (Pixley and Abell's Circular.)

[0,000's omitted, thus 10,91 = 10,910,000.]

Years.	Silver sent to *East.*	Bills Drawn by India Council.	Imports of *Silver* into United Kingdom.	Silver *Coined* in United Kingdom.	Average Price Standard Silver in London.	Average Bank-rate Discount.
	Mln. £	Mln. £	Mln. £	Mln. £	Per oz. *d.*	Per cnt.
1876....	10,91	11,51	13,56	0,22	$52\frac{3}{4}$	$2\frac{1}{2}$
'75....	3,71	10,84	9,50	0,59	$56\frac{7}{8}$	$3\frac{1}{4}$
'74....	7,09	13,28	11,80	0,89	$58\frac{5}{16}$	$3\frac{3}{4}$
'73....	2,50	13,94	12,30	1,08	$59\frac{1}{4}$	$5\frac{1}{2}$
'72....	5,65	10,31	11,14	1,24	$60\frac{5}{16}$	$4\frac{1}{2}$
'71....	3,71	8,44	16,52	0,70	$60\frac{1}{2}$	$3\frac{1}{4}$
1870....	1,58	6,98	10,65	0,33	$60\frac{1}{4}$	3
'69....	2,36	3,70	6,73	0,07	$60\frac{7}{16}$	$3\frac{1}{4}$
'68....	1,63	4,14	7,71	0,30	60	2
'67....	0,64	5,61	8,02	0,19	60	$2\frac{1}{4}$
'66....	2,36	7,00	10,78	0,49	$61\frac{1}{8}$	7

"We continue the table of last year, showing the estimated production of gold and silver in the United States since 1848, according to Professor Raymond:—

(III).—*Gold and Silver*, 1848-76. *Production in California and United States, according to Statement of Professor Raymond, United States Commissioner of Mining.*

[In Mln. £, (£ = $). 0,000's omitted, thus ,01 = 10,000/.]

Year.	Gold.	*Silver.*	Total.	Year.	Gold.	*Silver.*	Total.
	Mln. £	Mln. £	Mln. £		Mln. £	Mln. £	Mln. £
1848	2,00	,01	2,01	1861	8,60	,40	9,00
'49	8,00	,01	8,01	'62	7,84	,90	8,74
'50	10,00	,01	10,01	'63	8,00	1,70	9,70
				'64	9,22	2,20	11,42
Average	6,30	,01	6,41	'65	10,64	2,25	12,89
				Average	8,86	1,45	10,31
1851	11,00	,01	11,01	1866	10,70	2,00	12,76
'52	12,00	,01	12,01	'67	10,34	2,70	11,04
'53	13,00	,01	13,01	'68	9,60	2,40	12,00
'54	12,00	,01	12,01	'69	9,70	2,60	12,30
'55	11,00	,01	11,01	'70	10,00	3,20	13,20
Average	11,80	,01	11,81	Average	10,07	2,60	12,67
				1871	8,70	4,40	13,10
				'72	7,20	5,15	12,35
1856	11,00	,01	11,01	'73	7,20	7,15	14,35
'57	11,00	,01	11,01	'74	8,43	6,06	14,49
'58	10,00	,01	10,01	'75	8,40	7,12	15,52
'59	10,00	,02	10,02				
'60	9,20	,03	9,23	Average	8,00	6,00	14,00
Average	10,25	,12	10,37	1876	9,77	7,70	17,47

Note.—The figures for 1876 are from the *New York Chronicle*, 13th January, 1877.

" Messrs. Ellison and Co., of Liverpool, in their report on the Cotton Trade, say :—

" 'The best that can be said for 1876 is that, from a business point of view, it was less unsatisfactory than 1875. Even this can scarcely be said of the first nine months, and it is entirely owing to the improvement which took place in the last three months that the results of the year came out, on average, better than 1875. For the first six months, with the exception of a temporary reaction in March, the tendency of prices, owing to unexpectedly heavy American receipts, dull trade in Manchester, and the disorganised state of the Indian exchanges, *was downwards*. At times considerable depression existed, and it was feared that the heavy losses suffered by importers and speculators would lead to disastrous results ; but with a few trifling exceptions, all liabilities were well met, and no failures of moment occurred—a certain proof that the business of the market had, as a rule, been conducted upon a sound basis.' "

The following tables correspond to those given in previous years :—

(IV).—*United Kingdom*, 1857-76. *Estimated Value of Raw Cotton Imported, Re-Exported, and Consumed.* (Ellison's Circular.)

[00,000's omitted, thus 37,2 = 37,200,000*l.* The *bales* are given in full.]

Years.	Import.		Re-Exported.	Consumed, United Kingdom.		
	Value.	Price.	Value.	Value.	Total Weight.	Bales per Week, 400 lbs. each.
	Mln. £	Per lb. *d.*	Mln. £	Mln. £	Mln. lbs.	No.
1876.....	37,2	6⅛	4,2	32,8	1,274,	61,250
'75.....	42,9	7 1/16	6,1	36,5	1,230,	59,160
'74.....	47,1	7½	6,0	40,2	1,266,	60,870
'73.....	54,2	8⅝	6,1	45,4	1,246,	59,910
1872.....	53,3	9 5/16	8,5	48,0	1,175,	56,510
'71.....	55,9	8	9,8	40,8	1,205,	57,950
'70.....	51,0	9 5/16	8,2	42,1	1,071,	51,520
'69.....	55,2	11 1/16	11,3	43,8	940,	45,140
1868.....	52,0	9⅝	11,6	41,0	996,	47,890
'67.....	53,8	10⅛	14,0	41,2	954,	45,890
'66.....	75,8	13½	19,5	51,9	800,	42,829
'65.....	63,2	15¾	17,1	47,2	718,	34,550
1864.....	82,2	22	22,1	52,4	561,	26,980
'63.....	58,0	20½	21,6	40,7	476,	22,910
'62.....	31,1	14	12,4	24,7	449,	21,620
'61.....	38,7	7⅜	7,9	32,2	1,005,	49,800
1860.....	36,6	6⅜	5,5	28,9	1,079,	51,890
'59.....	32,2	6½	4,1	27,6	974,	46,820
'58.....	27,2	6⅝	3,3	24,8	907,	43,600
'57.....	28,6	7⅛	3,5	24,8	825,	39,660

" 'The difference between the highest and lowest rates for middling Uplands on the spot was 1 3/16*d.*, against 1 5/16*d.* in 1875, 1 5/16*d.* in 1874, 2¼*d.* in 1873, 2*d.* in 1872, 2 3/16*d.* in 1871, 4¼*d.* in 1870, and 2⅝*d.* in 1869.'

(V).—*Cotton Cloth and Yarn, Exported and Estimated as Actually Consumed at Home*, 1857-76, *in Millions of Pounds Weight.* (Ellison's Circular.)

[000,000's omitted.]

1	2	3	4	5	6	7	8	9
Years.	Yarns and Cloth Exported.			*Home Consumption,* Yarns and Cloth.	Total Weight.	Average Prices of Raw Cotton.		
	Yarn.	Cloth.	Total.			Imported.	Exported.	Home Consumption.
	Mln. lbs.	Mln. lbs.	Mln. lbs.	Mln. lbs.	Mln. lbs.	Per lb. *d.*	Per lb. *d.*	Per lb. *d.*
1876....	232,	735,	967,	164,	1,131,	6 1/8	5 1/4	6 3/16
'75....	215,	713,	928,	160,	1,088,	7 1/16	5 7/8	7 1/8
'74....	220,	726,	946,	173,	1,120,	7 1/2	6	7 5/8
'73....	215,	688,	903,	175,	1,077,	8 5/8	7	8 3/4
1872....	212,	698,	910,	129,	1,055,	9 5/16	7 1/2	9 3/4
'71....	193,	680,	873,	199,	1,058,	8	7	8 1/4
'70....	186,	616,	802,	140,	942,	9 1/2	8 1/2	9 3/4
'69....	169,	535,	704,	112,	829,	11 1/4	10	11 1/4
1868....	174,	548,	723,	160,	883,	9 1/2	8 3/4	9 1/8
'67....	164,	523,	687,	145,	832,	10 1/2	9 1/2	10 3/8
'66....	134,	491,	625,	145,	770,	13 1/2	11 7/8	14
'65....	98,	377,	475,	150,	625,	15 3/4	14 1/8	15 3/4
1864....	71,	332,	403,	110,	513,	22	21 1/2	22 7/8
'63....	70,	321,	392,	93,	485,	20 1/8	19 7/8	20 1/2
'62....	88,	324,	412,	102,	514,	14	13 3/4	14 1/4
'61....	177,	496,	674,	174,	848,	7 3/8	6 1/8	7 3/8
1860....	197,	542,	740,	173,	913,	6 1/2	5 1/4	6 1/2
'59....	192,	500,	693,	172,	865,	6 1/4	5 3/4	6 3/8
'58....	200,	452,	652,	158,	810,	6 5/8	5 5/8	6 5/8
'57....	176,	466,	583,	156,	739,	7 1/8	6 1/8	7 1/4

(VI).—*Exports of Cotton Piece Goods*, 1876-74 *and* 1860, *in Quantities (Millions of Yards) and Percentage of Totals.* (Ellison's Circular.)

[000,000's omitted, thus 1,400, = 1,400,000,000.]

Exported to	Quantities.				Per Cent. of Total.			
	1876.	1875.	1874.	1860.	1876.	1875.	1874.	1860.
	Mln. yds.	Mln. yds.	Mln. yds.	Mln. yds.	Per cnt.	Per cnt.	Per cnt.	Per cnt.
India and Egypt	1,400,	1,344,	1,397,	910,	38·2	37·8	38·8	32·9
China	597,	436,	464,	324,	16·3	12·2	12·9	11·7
Turkey and Levant	323,	282,	306,	272,	8·8	7·9	8·5	9·8
	2,320,	2,062,	2,167,	1,506,	63·3	57·9	60·2	54·4
United States	55,	80,	105,	226,	1·5	2·2	2·9	8·2
Rest of America and West India	508,	556,	605,	527,	13·9	15·6	16·8	19·0
	2,883,	2,698,	2,877,	2,259,	78·7	75·7	79·9	81·6
Italy, Austria, &c.	237,	214,	208,	198,	6·4	6·0	5·8	7·1
Germany.....	103,	116,	116,	102,	2·8	3·3	3·2	3·7
Other Countries.....	445,	532,	402,	217,	12·1	15·0	11·1	7·6
	3,668,	3,560,	3,603,	2,776,	100·0	100·0	100·0	100·0

(VII).—*An Estimate of the Value of the Production of Cotton Manufactures in Great Britain, with the Cost of Cotton Consumed, and the Balance Remaining for Wages, all other Expenses, Interest of Capital and Profits, for each of the Past Ten Years.*

[00,000's omitted.]

Year.	Total Value of Goods Produced.	Cost of Raw Cotton.	Left for Wages, Profit, and other Expenses.	Year.	Total Value of Goods Produced.	Cost of Raw Cotton.	Left for Wages, Profit, and other Expenses.
	Mln. £	Mln. £	Mln. £		Mln. £	Mln. £	Mln. £
1876....	89,8	32,8	57,0	1871....	101,9	40,8	61,1
'75....	95,4	36,5	58,9	'70....	93,1	42,1	51,0
'74....	100,5	40,2	60,3	'69....	86,1	43,7	42,4
'73....	104,6	45,4	59,1	'68....	91,7	40,9	50,7
'72....	102,2	48,0	54,2	'67....	90,4	41,2	49,1

(VIII).—*European Rates of Discount*, 1872-76. *Average Annual Rates per Cent. per Annum, at Places as under for First-class Bills, being Abstract of Appendix* (G).

Places.	1876.		1875.		1874.		1873.		1872.	
	Principal Bank.	Open Market.	Principal Bank.	Open Market.	Principal Bank.	Open Market.	Principal Bank.	Open Market.	Principal Bank.	Open Market.
	Pr. cnt.	Per cnt.	Pr. cnt.	Per cnt.	Pr. cnt.	Per cnt.	Pr. cnt.	Per cnt.	Pr. cnt.	Per cnt.
London	2½	2¼	3¼	3	3⅔	3½	4	4½	4½	4¼
Paris	3⅜	2¼	4	3¼	4½	4	5¼	5	5¼	4½
Frankfort	5	3¼	4¼	3⅝	3¾	3⅛	4¾	4½	4½	4
Amsterdam	3	2¾	4⅜	3¼	3¾	3½	4¾	4½	3½	3
Hamburg	—	3⅛	—	3¾	—	3½	—	4½	3½	3
Brussels	2¾	2½	4¾	3½	4½	4 1/16	5	4¾	4	4
Berlin	3¾	3⅛	4⅜	3¾	4½	3¼	5	4½	4½	4
Vienna.....	4½	4⅛	4⅜	4½	4⅞	4⅞	5¼	5¼	6	5¾
Petersburg	6⅜	7	5¼	5¼	6	5⅞	6¼	6¼	6½	6½
Turin	—	—	—	—	—	—	—	—	—	—
Madrid	—	—	—	—	—	—	—	—	—	—

" Connected with the subject of the rates of interest it is well to bear in mind that, as a consequence of the progress of commerce and population, there is coming largely into operation in all countries, but especially in this country, an increasing vast *annual* expenditure of capital by railways, and lines of navigation, and the like, in order to replace wear and tear, and to enlarge and extend the undertakings themselves in order to accommodate the pressure of business. For example, in the five years 1872-76 (ended 30th June, 1876), the total outlay of capital on railways in the United Kingdom has been: on lines open, 22 million pounds; on new lines, 20 million pounds; on rolling, &c., stock, 11½; on

docks, steamboats, &c., 1—total, 55 million pounds, or equal, on the average, to more than one million per month; and for several years to come this rate of outlay is not likely to be less—but rather, more.

"We continue an abstract Table (IX) of the bullion reserves (mostly gold), and the condition of the official banks of France, Germany, Austria, and Belgium:—

(IX).—*Leading Foreign Banks*, 1873-76. *Notes in Circulation and Bullion Reserve, being Summary of Appendix (passim) in Million £.*

[00,000's omitted, thus 111,5 = 111,500,000*l.*]

Dates.	Bank of France.		Imperial Bank of Germany.		Bank of Austria.		Bank of Belgium.	
	Notes.	Bullion.	Notes.	Bullion.	Notes.	Bullion.	Notes.	Bullion.
1873.	Mln. £	Mln. £	Mln. £	Mln. £	Mln. £	Mln. £	Mln. £	Mln. £
1st January	111,5	31,7	45,5	27,6	32,5	14,2	11,7	4,7
1st July	115,7	31,0	42,7	35,4	35,5	14,4	14,1	5,6
1874.								
1st January	115,8	30,6	44,6	35,2	36,0	14,4	12,6	4,2
1st July	100,9	47,8	42,1	35,5	30,2	14,2	11,8	3,9
1875.								
1st January	105,9	52,8	41,9	30,3	30,1	13,9	13,1	4,7
1st July	96,9	62,7	43,3	29,8	29,1	13,8	12,9	4,9
1876.								
1st January	100,4	67,4	35,7	22,2	28,8	13,6	13,5	4,8
1st March	100,4	72,1	31,4	24,2	28,0	13,6	13,0	5,0
1st July	99,2	83,0	38,2	27,1	27,4	—	13,1	5,5
1st October	101,7	84,2	36,6	25,0	29,2	—	12,8	5,3
1st November	104,0	85,5	36,0	24,5	31,2	—	13,1	5,0
1st December	102,6	87,0	35,3	25,7	29,3	—	13,1	4,8

Note.—In *France*, through 1873, the market price of *gold* was 2 to 9½, average 7¾ per mille prem. In 1874, bank notes were at *par;* in 1875, the same; in 1876, also the same.

In *Austria*, in 1873, the premium on gold was 8 per cent.; in 1874 it was 5¼ per cent.; in 1875 it was 3¼ per cent.; and in 1876 it was 4½.

In *Italy*, in 1873, the premium on gold was 9 to 15 per cent.; in 1874 it was 11½ per cent.; in 1875 it was 8 per cent.; and in 1876 it was 9 per cent.

In *Russia*, in 1873, the price of silver was 12 per cent.; in 1874, it was 13 per cent.; in 1875, it was 15 per cent.; and in 1876 it was 20.

"At the Bank of France the bullion reserve (perhaps one-third silver) has reached the previously unheard-of total of 87 million pounds. The notes of the Bank of France sustain themselves at par, and it must be inferred that at length these notes are really penetrating into the country and exciting a confidence which leads the peasants to prefer them for use and even for hoarding, to the five-franc pieces.

"W. Fallows and Co. (Liverpool) report:—

"'The iron trade has passed through a year of extreme adversity and depression. During its course some of the largest and wealthiest manufacturing concerns had to succumb to the severe reaction which succeeded the inflation of 1872 and 1873, whilst the operatives suffered in no small degree by the decreased demand for labour and greatly diminished wages. During 1876 there has been *a further reduction in the wages paid to puddlers and millmen* of 7½ to 12½ per cent., and *miners* of 10 to 15 per cent. This will bring wages back to about the old level of 1868, but there still remains the question of the *hours of labour* (which were reduced during the last few years), and it may yet be necessary to resort to the old standard in this respect also. The men have worked steadily during 1876, excepting a slight difficulty with the North Staffordshire miners in May.

"'Coal has been in abundant supply, which is an important element in connection with the iron trade, and the prospects in this respect are satisfactory. It is scarcely to be anticipated that, under any circumstances, prices can be forced back to the old level, as it is estimated by the best authorities that *the cost of getting coal* has been increased 1*s.* 6*d.* to 2*s.* per ton by the requirements of the Mines Regulation Act, coupled with the shortened hours of labour. This must tend to raise the level of prices in iron, notwithstanding the economies which have been introduced of late.

"'To understand the extraordinary changes which have taken place in *the relative production* of the different districts during the past twenty years we give the following figures:—

Pig Iron. Production.	1855.	1865.	1875.	1876.
	Tons.	Tons.	Tons.	Tons.
South Staffordshire	754,000	692,627	470,540	390,000
„ Wales	840,070	845,305	541,809	420,000
North of England	389,360	1,135,711	2,047,763	2,070,000
Scotland	820,000	1,164,000	1,050,000	1,103,000
North Staffordshire	101,500	206,268	241,398	220,000
Cumberland ..... }	16,570	312,355	486,112	400,000
Lancashire ..... }			558,780	520,000
Other districts	291,150	462,988	969,060	1,027,000
	3,212,650	4,819,254	6,365,462	6,150,000

"'For the sake of comparison, we give below the *lowest prices* which have ruled between 1851 and 1876, and the exceptionally high prices of 1873 by way of contrast:—

Year.	Welsh Bar in Liverpool.	Rails in Wales.	Scotch G.M.B. Pig Iron, f.o.b. Glasgow.	S. Staff. "List" Iron.
	£ *s.* £ *s.*	£ *s.* £ *s.*	£ *s.* £ *s.*	£ *s.* £ *s.*
1851	4 17 @ 5 7	4 15 @ 5 –	1 18 @ 2 3	6 15 —
'62	5 10 „ 6 10	5 10 „ 6 –	2 9 „ 2 16	7 15 —
'68	5 15 „ 6 10	5 10 „ 6 –	2 11 „ 2 14	7 15 —
1873	11 10 „ 13 –	11 – „ 12 –	5 1 „ 7 5	12 5 @ 16 15
1876	6 12 „ 7 10	5 – „ 6 5	2 16 „ 3 6	9 15 „ 10 15

"'Unsatisfactory as the state of the iron trade has been, the accounts from *America, Germany, and Belgium disclose a condition of things even worse in some respects,* and prove how widespread and serious the depression has been throughout the world. The latest statistics from *America* show that out of 719 furnaces built, only 216 were in blast, and that while capable of producing 5½ million tons of pig iron per annum, the production of 1875 was only 2,266,581 tons, whilst the figures for 1876 will probably be still less. The accounts received from Germany and Belgium have been most unsatisfactory, and France alone has in some measure proved an exception to the general rule. The production of pig iron throughout the world in 1876 was probably about 15,000,000 tons; Great Britain occupying the first position, and the United States the second.'

"The following is our usual *percentage comparison* of prices at 1st January, 1877, and three previous dates:—

(X).—*Wholesale Prices in London. Comparison of 1st January,* 1877, *with Four Former Dates, stating in Approximate Percentages the Degree in which the Prices at 1st January,* 1877, *were Higher or Lower than the Prices brought into the Comparison, see Appendix* (C).

Articles.	Higher Than 1st January, 1876.	Lower Than 1st January, 1876.	Higher Than 1st January, 1875.	Lower Than 1st January, 1875.	Higher Than 1st January, 1870.	Lower Than 1st January, 1870.	Higher Than 1st July, 1867.	Lower Than 1st July, 1867.
	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.
Coffee	—	2	2	—	33	—	20	—
Sugar	30	—	30	—	6	—	34	—
Tea	—	—	—	—	—	2	—	8
Wheat	17	—	20	—	20	—	—	14
Butchers' meat	—	10	—	—	12	—	13	—
Indigo	32	—	6	—	17	—	20	—
Oils	—	—	2	—	—	10	—	18
Timber	—	—	2	—	30	—	33	—
Tallow	—	18	—	7	—	3	—	4
Leather	—	—	—	6	11	—	12	—
Copper	—	—	—	12	12	—	—	5
Iron	—	20	—	24	20	—	18	—
Lead	—	4	—	7	14	—	10	—
Tin	—	4	—	20	—	32	—	4
Cotton	—	12	—	13	—	30	—	60
Flax and hemp	—	6	4	—	—	15	—	17
Silk	120	—	68	—	8	—	—	—
Wool	5	—	—	2	45	—	—	—
Tobacco	—	13	—	17	26	—	5	—
Cotton cloth	—	—	—	2	—	17	—	33
Bank Note circulation of Great Britain	—	—	5	—	18	—	16	—

Note.—This table is deduced from the details given in Appendix (A), and is read thus:—The prices of 1st January, 1877, were, as regards *coffee*, 2 per cent. *lower* than the prices of 1st January, 1876; 2 per cent. *higher* than at 1st January, 1875; 33 per cent. *higher* than at 1st January, 1870; and 20 per cent. *higher* than at 1st July. 1867. In some cases it is impossible to arrive satisfactorily at these percentages in consequence of the wideness of the quotations given in the prices current, and also in consequence of changes in classifying the qualities of the articles—changes necessarily incident to improvement of culture and manufacture.

"The prices of 1st January, 1877, are generally lower than a year ago, and still lower than two years ago. But there is a considerable advance over 1st January, 1870, and over 1st January, 1867.

"Among the most needful of the mercantile reforms required in this country is a really sound Bankruptcy Act—an Act framed and administered in the just interest of the creditor and of public honesty, and not, as in the present system, in favour of the scheming and dishonest debtor, and the legion of liquidators who flourish on the misfortunes of the mercantile body and the laxity and defects of the law.

"In the next place, the time has fully come when the whole of the legislation relating to Limited Liability Companies should be consolidated and amended. The Acts of 1862 and 1867 have become inadequate. They did very well for a beginning, but the large, varied, and, in many respects, the disastrous experience of the last fifteen years has thrown many new lights on the whole subject. The legal decisions have become, under these Acts, of the most extensive and complex character, and the sound part of them requires embodiment in a new version of the law. The Government could not render a greater service than to refer the whole subject to a competent Departmental Committee, with instructions to frame a clear and comprehensive Bill for consideration in 1878.

"We refer to Appendix (M) for a discussion of the deeper causes of the commercial distress 1873-76."

With reference to the last paragraph, and for the information of those who may wish to have a concise indication of the scope of the "Commercial History and Review of 1876," the table of contents is appended.

Year 1876.—General Results of its Commercial and Financial History:—

I.—Corn and Cattle Trades.
II.—Colonial and Tropical Produce.
III.—Wine Trade.
IV.—Raw Materials.
V.—Shipping and Freights.
VI.—Cotton Trade.
VII.—Linen Trade.
VIII.—West Riding, &c., Woollen, Worsted, Flax, Iron, and other Trades.
IX.—The Money Markets in 1876.

Appendix.

A.—Wholesale Prices of Commodities in London and Manchester: Average of Six Years, 1845-50: Selected Dates 1865-75: and Monthly, 1876.
B.—Prices of Grain: England and Wales: Calendar Year.

C.—Wholesale Prices, 1845-76: Proportionate Results.
D.—Bank of England: Weekly Return.
E.—Bank of France.
F.—Banks of Prussia, Belgium, Austria, and Hamburg.
G.—European Rates of Discount per Cent. per Annum, 1875 and 1876.
H.—Foreign Exchanges, 1841-76.
I.—Joint Stock Banks in London: Group (A): Entirely Metropolitan.
J.—The London Discount Companies.
K.—The Deeper Causes of the Commercial Distress, 1873-76.
L.—Gold and Silver, 1851-76: Exports to Egypt and East, from United Kingdom, &c.
M.—Four Years (1873-76) of Coal Mining.
N.—The Course of Prices of Commodities since April, 1876.

II.—*Lloyd's Statistics of Marine Losses for the Year* 1876.

As we anticipated on the last issue of Lloyd's Tables of Marine Losses, we are enabled by the energy of the Statistical Department of that Corporation, to publish the figures for 1876 three months earlier in the year than those for 1875, namely in our June *Journal* instead of that for September, thereby increasing their interest and usefulness.

The present tables give the opportunity of comparing 1876 with the ten preceding years, thus considerably extending the range of observation.

For facility of reference we may state that the annual tables already published in the *Journals of the Satistical Society* appeared respectively as under:—1872—December, 1874; 1873—March, 1875; 1874—March, 1876; and 1875—September, 1876.

Having thus published the casualties for five consecutive years, we proceed to compare the figures with those for the ten years from 1866 to 1875 inclusive.

Lives Lost. Reports as to these are still imperfect and unreliable, still they are interesting and important as far as they go. The five years give the following figures:—

	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.	Annual Total.
Lives lost so far as reported .....'1872	280	370	232	648	1,530
'73	467	699	164	645	1,975
'74	413	500	219	352	1,484
'75	262	558	280	729	1,829
'76	377	499	369	434	1,679
Five years' average	360	525	253	561	1,699
Percentage on annual total.....	21·19	30·90	14·89	33·02	100·00
Ten years' previous average, 1866-75	374	499	246	587	1,706
Percentage on annual total.....	21·93	29·25	14·42	34·40	100·00

Crews reported saved or drowned—So far as information has been given the following results appear :—

	Crews Saved.					Crews Drowned.				
	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.	Annual Total.	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.	Annual Total.
Sailing Vessels—										
1872	280	204	156	558	1,198	22	24	18	46	110
'73	378	144	172	312	1,006	64	66	31	46	207
'74	247	190	140	398	975	39	55	39	34	167
'75	258	160	149	400	967	38	22	17	45	122
'76	251	185	151	384	971	23	25	15	50	113
Five years' average	283	177	153	410	1,023	37	38	24	44	143
Percentage on annual total	27·67	17·30	14·95	40·08	100·00	25·87	26·57	16·79	30·77	100·00
Ten years' previous average	271	156	160	352	939	26	20	13	31	90
Percentage on annual total	28·86	16·62	17·04	37·48	100·00	28·89	22·22	14·45	34·44	100·00
Steamers—										
1872	21	25	21	33	100	5	1	—	7	13
'73	26	9	18	18	71	14	1	—	1	16
'74	26	20	19	30	95	6	7	2	3	18
'75	31	14	21	26	92	4	1	1	5	11
'76	16	13	21	30	80	4	—	—	4	8
Five years' average	24	16	20	27	87	7	2	1	4	14
Percentage on annual total	27·59	18·40	22·98	31·03	100·00	50·00	14·28	7·14	28·58	100·00
Ten years' previous average	18	12	13	18	61	3	1	1	1	6
Percentage on annual total	29·51	19·67	21·31	29·51	100·00	50·00	16·67	16·67	16·66	100·00

The more serious casualties reported were as under :—

	Percentage on Annual Total.					
	1872.	1873.	1874.	1875.	1876.	Ten Years' Previous Average.
Sailing Vessels—						
In collision	16·15	18·85	16·91	18·69	20·56	16·95
Stranded	25·68	26·06	25·39	24·88	27·10	27·08
Leaky	11·52	11·95	10·97	10·94	10·09	11·00
Other casualties	46·65	43·14	46·73	45·49	42·25	44·97
	100·00	100·00	100·00	100·00	100·00	100·00
Steamers—						
In collision	28·65	30·43	27·06	31·35	32·05	30·97
Stranded	25·50	24·51	25·60	26·48	26·00	25·79
Leaky	2·15	2·45	2·74	2·59	2·35	2·58
Other casualties	43·70	42·61	44·60	39·58	39·60	40·66
	100·00	100·00	100·00	100·00	100·00	100·00

The percentages of *results* to the vessels reported, so far as ascertained, were as follow :—

	Percentage on Annual Total.					
	1872.	1873.	1874.	1875.	1876.	Ten Years' Previous Average.
Sailing Vessels—						
Total or constructive loss or great damage	28·09	30·99	29·59	26·43	28·09	32·24
Minor damage	53·15	50·15	51·68	52·22	45·47	46·69
Not damaged or results unknown	18·76	18·86	18·73	21·35	26·44	21·07
	100·00	100·00	100·00	100·00	100·00	100·00
Steamers—						
Total or constructive loss or great damage	14·08	15·28	16·26	12·02	13·65	16·89
Minor damage	50·14	47·64	48·99	48·85	44·88	42·76
Not damaged or results unknown	35·78	37·08	34·75	39·13	41·47	40·35
	100·00	100·00	100·00	100·00	100·00	100·00

The proportion of casualties reported to Lloyd's to the number of mercantile sea-going vessels existing in the different years, as given in the *Répertoire Général* of the Bureau Veritas was as under :—

	Percentage of Casualties to Sea-going Vessels Existing.				
	1872.	1873.	1874.	1875.	1876.
Sailing vessels	20·51	19·77	19·73	18·81	18·61
Steamers	55·32	47·55	46·97	46·12	30·59

Missing vessels, or vessels which are believed to have been lost with all hands, show a marked and satisfactory diminution, as follows:—

Missing Vessels.	1872.	1873.	1874.	1875.	1876.	Ten Years' Previous Average.
Sailing vessels	80	148	111	71	58	92
Steamers	9	16	17	11	4	9
Total	89	164	128	82	62	101

Vessels burnt or on fire give the following figures:—

	1872.	1873.	1874.	1875.	1876.	Ten Years' Previous Average.
Sailing vessels	122	153	171	124	132	149
Steamers	59	56	57	58	65	45
Total	181	209	228	182	197	194

The comparative constancy of the proportions of the various casualties cannot fail to be remarked, more particularly when the vast variety of elements which are included, and the limited area of observation are remembered; and the regular gradation of decrease in the proportion of casualties reported to Lloyd's to the sea-going vessels existing, from 1872 onwards, is alike noticeable and interesting.

This reduction in the proportion of casualty, it would seem must not be attributed entirely to improved navigation, less severe weather, or the absence of any of the ordinary causes of disaster, but to a considerable extent, it is to be feared, to the increased number of vessels, particularly steamers, which have been laid up through the want of remunerative employment for them.

Collisions, however, in 1876 contrast unfavourably, as it appears that rather more than one in five of the *sailing vessels*, and nearly one in three of the *steamers* to which casualties occurred were in collision.

1.—*A Table showing the Number of Wrecks and Casualties to Sailing Vessels and Steamers Compared with the Average Number and*

Sailing Vessels.	First Half-Year.				Second Half-Year.				Annual Total.			
	1876.		Average Ten previous Years.		1876.		Average Ten previous Years.		1876.		Average Ten previous Years.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
1. *Missing*	35	0·74	60	1·23	23	0·38	32	0·54	58	0·54	92	0·85
2. *Abandoned*—												
Recovered	26	0·55	33	0·67	38	0·63	39	0·66	64	0·60	72	0·66
Lost	63	1·33	123	2·51	135	2·25	134	2·26	198	1·84	257	2·38
Total	89	1·88	156	3·18	173	2·88	173	2·92	262	2·44	329	3·04
3. *Collision*—												
Not damaged	398	8·41	209	4·27	404	6·73	286	4·83	802	7·47	495	4·57
Damaged	591	12·49	546	11·13	680	11·32	639	10·80	1,271	11·84	1,185	10·95
Sunk	65	1·37	73	1·49	69	1·15	81	1·37	134	1·25	154	1·43
Total	1,054	22·27	829	16·89	1,153	19·20	1,006	17·00	2,207	20·56	1,835	16·95
4. Sinking from causes other than collision	108	2·28	157	3·19	156	2·60	181	3·07	264	2·46	338	3·12
5. *Stranded*—												
Got off	796	16·83	697	14·19	916	15·25	762	12·89	1,712	15·95	1,459	13·48
Not got off	388	8·20	500	10·18	613	10·21	670	11·33	1,001	9·32	1,170	10·81
Subsequent fate not reported	66	1·39	127	2·60	131	2·18	175	2·96	197	1·83	303	2·79
Total	1,250	26·42	1,325	26·97	1,660	27·64	1,608	27·18	2,910	27·10	2,933	27·08
6. Capture	—	—	4	0·09	1	0·02	9	0·16	1	0·01	14	0·13
7. Piracy	—	—	2	0·04	1	0·02	2	0·04	1	0·01	4	0·04
8. Burnt or on fire	59	1·25	68	1·39	73	1·22	80	1·36	132	1·23	149	1·37
9. Dismasted or disabled	209	4·42	186	3·78	334	5·56	285	4·82	543	5·06	471	4·35
10. Jettison of cargo under deck	76	1·61	94	1·91	92	1·53	91	1·53	168	1·56	185	1·71
11. Jettison of deck-load or washed overboard	46	0·97	56	1·14	114	1·90	118	2·00	160	1·49	174	1·61
12. Leaky	460	9·72	521	10·61	623	10·37	670	11·32	1,083	10·09	1,191	11·00
13. Loss of anchor or chains	324	6·85	229	4·67	178	2·96	279	4·72	502	4·66	508	4·70
14. Machinery damaged, &c.	—	—	—	—	—	—	—	—	—	—	—	—
15. Mutiny, sickness, casualties to crew, or refusing duty	105	2·22	124	2·53	105	1·75	121	2·05	210	1·96	245	2·26
16. Ship dmged., &c.	908	19·19	1,090	22·19	1,300	21·64	1,240	20·97	2,208	20·57	2,330	21·52
17. Water-logged	8	0·17	10	0·21	20	0·33	19	0·32	28	0·26	29	0·27
Number of casualties	4,731	—	4,912	—	6,006	—	5,916	—	10,737	—	10,828	—
Number of vessels	4,430	—	4,561	—	5,661	—	5,527	—	10,091	—	10,089	—

reported in "Lloyd's List," during the Year 1876, *and the respective Percentages thereon Percentages for the Ten Previous Years.*

First Half-Year.				Second Half-Year.				Annual Total.				Steamers.
1876.		Average Ten previous Years.		1876.		Average Ten previous Years.		1876.		Average Ten previous Years.		
Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	
1	0·08	6	0·78	3	0·21	3	0·27	4	0·15	9	0·50	1. *Missing*
												2. *Abandoned*—
—	—	1	0·10	—	—	—	—	—	—	1	0·07	Recovered
4	0·34	2	0·23	2	0·14	2	0·18	6	0·23	4	0·20	Lost
4	0·34	3	0·33	2	0·14	2	0·22	6	0·23	5	0·27	Total
												3. *Collision*—
201	16·83	121	15·00	254	18·11	169	17·69	455	17·53	290	16·46	Not damaged
151	12·65	101	12·48	188	13·41	131	13·64	339	13·06	231	13·11	Damaged
17	1·42	10	1·25	21	1·50	14	1·52	38	1·46	25	1·40	Sunk
369	30·90	232	28·73	463	33·02	314	32·85	832	32·05	546	30·97	Total
20	1·68	19	2·43	21	1·50	24	2·55	41	1·58	44	2·49	4. Sinking from causes other than collision
												5. *Stranded*—
283	23·70	165	20·47	296	21·11	191	19·97	579	22·30	356	20·20	Got off
31	2·59	33	4·10	50	3·57	44	4·60	81	3·12	77	4·37	Not got off
5	0·42	12	1·50	10	0·71	9	0·99	15	0·58	22	1·22	Subsequent fate not reported
319	26·71	210	26·07	356	25·39	245	25·56	675	26·00	455	25·79	Total
—	—	—	—	—	—	1	0·10	—	—	1	0·09	6. Capture
—	—	—	—	—	—	—	—	—	—	—	—	7. Piracy
29	2·43	22	2·69	36	2·57	23	2·44	65	2·50	45	2·55	8. Burnt or on fire
10	0·84	7	0·88	14	1·00	11	1·16	24	0·92	18	1·03	9. Dismasted or disabled
24	2·01	12	1·55	27	1·93	11	1·20	51	1·97	24	1·36	10. Jettison of cargo under deck
7	0·58	6	0·72	6	0·43	10	1·05	13	0·50	16	0·90	11. Jettison of deckload or washed overboard
29	2·43	23	2·81	32	2·28	23	2·39	61	2·35	45	2·58	12. Leaky
15	1·26	9	1·15	17	1·21	8	0·86	32	1·23	17	0·99	13. Loss of anchors or chains
212	17·76	165	20·41	245	17·47	182	18·99	457	17·60	347	19·64	14. Machinery damaged or short of coals
8	0·67	10	1·24	12	0·86	10	1·03	20	0·77	20	1·13	15. Mutiny, sickness, casualties to crew, or refusing duty
147	12·31	82	10·13	168	11·98	89	9·32	315	12·13	171	9·69	16. Ship dmgd., &c.
—	—	—	—	—	—	—	—	—	—	—	—	17. Water-logged
1,194	—	807	—	1,402	—	957	—	2,596	—	1,765	—	Number of casualties
1,140	—	777	—	1,351	—	928	—	2,491	—	1,706	—	Number of steamers

2.—*A Table showing the Results of Wrecks and Casualties to Ship and Cargo, with Salvage during the Year* 1876, *and the respective Percentages thereon, Compared*

Sailing Vessels.	First Half-Year.				Second Half-Year.				Annual Total.			
	1876.		Average Ten previous Years.		1876.		Average Ten previous Years.		1876.		Average Ten previous Years.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
Results to Ship—												
Total loss	625	14·11	879	19·27	974	17·21	1,083	19·59	1,599	15·84	1,962	19·44
Constructive loss	58	1·31	91	2·01	63	1·11	84	1·53	121	1·20	176	1·75
Great damage	439	9·91	476	10·45	676	11·94	638	11·54	1,115	11·05	1,115	11·05
Minor damage	2,088	47·13	2,152	47·17	2,452	43·31	2,523	45·65	4,540	44·99	4,675	46·34
Raised after sinking	23	0·52	19	0·42	25	0·44	16	0·30	48	0·48	36	0·35
Not damaged or results unknown	1,197	27·02	943	20·67	1,471	25·99	1,182	21·39	2,668	26·44	2,125	21·07
Total	4,430	—	4,561	—	5,661	—	5,527	—	10,091	—	10,089	—
Results to Cargo so far as reported—												
All lost	306	6·81	508	11·13	389	6·87	540	9·78	695	6·89	1,049	10·40
Part lost	172	3·88	250	5·49	293	5·18	299	5·41	465	4·61	549	5·44
All saved	8	0·18	19	0·43	9	0·16	14	0·26	17	0·17	34	0·34
Forwarded	2	0·05	13	0·29	6	0·11	8	0·15	8	0·08	21	0·21
Heated	5	0·11	10	0·22	8	0·14	8	0·15	13	0·13	19	0·19
Shifted	29	0·66	65	1·42	76	1·34	69	1·25	105	1·04	134	1·33
Otherwise damaged	72	1·63	69	1·52	75	1·32	68	1·24	147	1·46	137	1·36
Salvage Services	372	8·40	443	9·73	488	8·62	483	8·74	860	8·52	927	9·19
Lives—												
Crews saved	436	9·84	427	9·37	535	9·45	512	9·26	971	9·62	939	9·31
Crews drowned	48	1·08	47	1·03	65	1·15	43	0·79	113	1·12	90	0·90
Lives lost so far as reported (in both ships and steamers)	876	—	873	—	803	—	833	—	1,679	—	1,706	—

Services, Crews Saved or Drowned and Lives Lost, so far as reported in "Lloyd's List," with the Average Number and Percentages for the Ten Previous Years.

First Half-Year.				Second Half-Year.				Annual Total.				Steamers.
1876.		Average Ten previous Years.		1876.		Average Ten previous Years.		1876.		Average Ten previous Years.		
Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	
												Results to Ship—
70	6·14	66	8·47	88	6·51	82	8·89	158	6·34	148	8·70	Total loss
4	0·35	5	0·66	3	0·22	4	0·42	7	0·28	9	0·53	Constructive loss
83	7·28	56	7·29	92	6·81	73	7·88	175	7·03	130	7·66	Great damage
504	44·21	338	43·46	599	44·34	378	40·73	1,103	44·28	716	41·97	Minor damage
4	0·35	6	0·77	11	0·81	7	0·81	15	0·60	13	0·79	Raised after sinking
475	41·67	306	39·34	558	41·30	383	41·27	1,033	41·47	689	40·39	Not damaged or results unknown
1,140	—	777	—	1,351	—	928	—	2,491	—	1,706	—	Total
												Results to Cargo so far as reported—
23	2·02	27	3·46	27	2·00	30	3·27	50	2·01	57	3·36	All lost
45	3·95	32	4·13	52	3·85	38	4·06	97	3·89	70	4·09	Part lost
1	0·09	1	0·19	—	—	1	0·13	1	0·04	2	0·15	All saved
—	—	1	0·14	—	—	1	0·07	—	—	2	0·11	Forwarded
3	0·26	1	0·10	1	0·07	1	0·07	4	0·16	1	0·09	Heated
12	1·05	9	1·18	24	1·78	13	1·43	36	1·45	22	1·32	Shifted
35	3·07	16	2·12	26	1·92	21	2·26	61	2·45	37	2·20	Otherwise damaged
89	7·81	61	7·85	108	7·99	64	6·88	197	7·91	123	7·21	*Salvage Services*
												Lives—
29	2·54	30	3·90	51	3·78	31	3·31	80	3·21	61	3·58	Crews saved
4	0·35	4	0·54	4	0·30	2	0·21	8	0·32	6	0·36	Crews drowned
—	—	—	—	—	—	—	—	—	—	—	—	Lives lost so far as reported (in both ships and steamers)

3.—*A Table showing the Number of Wrecks and Casualties to Sailing Vessels reported Compared with the Average Number and Percentages*

Sailing Vessels.	First Quarter.				Second Quarter.			
	1876.		Average Ten previous Years.		1876.		Average Ten previous Years.	
	Number.	Per-centage.	Number.	Per-centage.	Number.	Per-centage.	Number.	Per-centage.
1. *Missing*	16	0·55	27	0·86	19	1·03	33	1·90
2. *Abandoned*—								
Recovered	15	0·52	21	0·67	11	0·59	12	0·66
Lost	36	1·25	75	2·39	27	1·46	48	2·74
Total	51	1·77	96	3·06	38	2·05	60	3·40
3. *Collision*—								
Not damaged	240	8·34	126	4·02	158	8·53	83	4·71
Damaged	368	12·78	347	11·01	223	12·04	199	11·33
Sunk	33	1·14	43	1·38	32	1·73	30	1·68
Total	641	22·26	517	16·41	413	22·30	312	17·73
4. Sinking from causes other than collision	62	2·15	86	2·75	46	2·48	70	3·99
5. *Stranded*—								
Got off	411	14·27	412	13·07	385	20·79	285	16·20
Not got off	236	8·20	323	10·24	152	8·21	177	10·07
Subsequent fate not reported	42	1·46	85	2·71	24	1·29	42	2·40
Total	689	23·93	820	26·02	561	30·29	504	28·67
6. Capture	—	—	2	0·07	—	—	2	0·12
7. Piracy	—	—	1	0·03	—	—	1	0·04
8. Burnt or on fire	34	1·18	36	1·16	25	1·35	32	1·80
9. Dismasted or disabled	107	3·71	111	3·53	102	5·51	74	4·23
10. Jettison of cargo under deck	42	1·46	63	2·00	34	1·83	31	1·76
11. Jettison of deckload or washed overboard	23	0·80	35	1·13	23	1·24	20	1·14
12. Leaky	264	9·17	332	10·54	196	10·58	189	10·74
13. Loss of anchors or chains	270	9·41	186	5·90	54	2·92	43	2·45
14. Mutiny, sickness, casualty to crew or refusing duty	61	2·12	76	2·40	44	2·38	48	2·74
15. Ship damaged, loss of bulwarks, sails, &c.	614	21·32	755	23·79	294	15·88	335	19·01
16. Water-logged	5	0·17	5	0·17	3	0·16	5	0·28
Number of casualties	2,879	—	3,152	—	1,852	—	1,760	—
Number of vessels	2,674	—	2,897	—	1,756	—	1,664	—

in "Lloyd's List," during the Four Quarters of 1876, *and the respective Percentages thereon, for the same period of the Ten Previous Years.*

Third Quarter.				Fourth Quarter.				Sailing Vessels.
1876.		Average Ten previous Years.		1876.		Average Ten previous Years.		
Number.	Per-centage.	Number.	Per-centage.	Number.	Per-centage.	Number.	Per-centage.	
10	0·50	17	0·87	13	0·33	15	0·38	1. *Missing*
								2. *Abandoned*—
9	0·44	12	0·61	29	0·73	27	0·69	Recovered
29	1·44	36	1·85	106	2·66	98	2·46	Lost
38	1·88	48	2·46	135	3·39	125	3·15	Total
								3. *Collision*—
190	9·41	106	5·46	214	5·37	179	4·52	Not damaged
311	15·41	237	12·14	369	9·25	402	10·14	Damaged
29	1·44	31	1·57	40	1·00	50	1·27	Sunk
530	26·26	374	19·18	623	15·62	632	15·93	Total
52	2·58	72	3·68	104	2·61	110	2·77	4. Sinking from causes other than collision
								5. *Stranded*—
395	19·57	279	14·33	521	13·06	483	12·18	Got off
148	7·33	200	10·26	465	11·66	470	11·86	Not got off
34	1·69	48	2·48	97	2·43	127	3·20	Subsequent fate not reported
577	28·59	527	27·07	1,083	27·15	1,080	27·23	Total
1	0·05	4	0·19	—	—	6	0·15	6. Capture
1	0·05	1	0·08	—	—	1	0·02	7. Piracy
24	1·19	35	1·83	49	1·23	45	1·13	8. Burnt or on fire
104	5·15	101	5·21	230	5·77	184	4·63	9. Dismasted or disabled
28	1·39	30	1·59	64	1·60	61	1·53	10. Jettison of cargo under deck
24	1·19	20	1·04	90	2·26	98	2·47	11. Jettison of deckload or washed overboard
234	11·60	255	13·10	389	9·75	414	10·46	12. Leaky
53	2·63	47	2·43	125	3·13	231	5·84	13. Loss of anchors or chains
43	2·13	54	2·55	62	1·55	71	1·80	14. Mutiny, sickness, casualty to crew or refusing duty
292	14·47	360	18·44	1,008	25·28	880	22·16	15. Ship damaged, loss of bulwarks, sails, &c.
7	0·34	5	0·28	13	0·33	13	0·33	16. Water-logged
2,018	—	1,949	—	3,988	—	3,966	—	Number of casualties
1,929	—	1,851	—	3,732	—	3,677	—	Number of vessels

4.—*A Table showing the Number of Wrecks and Casualties to Steamers reported in Compared with the Average Number and Percentages*

Steamers.	First Quarter.				Second Quarter.			
	1876.		Average Ten previous Years.		1876.		Average Ten previous Years.	
	Number.	Per-centage.	Number.	Per-centage.	Number.	Per-centage.	Number.	Per-centage.
1. *Missing*	1	0·15	4	0·95	—	—	2	0·55
2. *Abandoned*—								
Recovered	—	—	—	—	—	—	—	—
Lost	2	0·29	1	0·28	2	0·39	1	0·17
Total	2	0·29	1	0·37	2	0·39	1	0·29
3. *Collision*—								
Not damaged	112	16·45	67	14·46	89	17·35	54	15·72
Damaged	93	13·65	58	12·58	58	11·31	43	12·36
Sunk	10	1·47	6	1·29	7	1·36	4	1·19
Total	215	31·57	131	28·33	154	30·02	101	29·27
4. Sinking from causes other than collision	11	1·62	11	2·42	9	1·75	8	2·44
5. *Stranded*—								
Got off	153	22·47	87	18·87	130	25·34	78	22·63
Not got off	16	2·35	18	3·91	15	2·92	15	4·35
Subsequent fate not reported	3	0·44	8	1·69	2	0·39	4	1·25
Total	172	25·26	113	24·47	147	28·65	97	28·23
6. Capture	—	—	—	—	—	—	—	—
7. Piracy	—	—	—	—	—	—	—	—
8. Burnt or on fire	17	2·49	10	2·18	12	2·34	11	3·36
9. Dismasted or disabled	7	1·03	4	0·97	3	0·59	2	0·75
10. Jettison of cargo under deck	11	1·62	6	1·36	13	2·53	6	1·79
11. Jettison of deckload or washed overboard	6	0·88	4	0·97	1	0·19	1	0·38
12. Leaky	15	2·20	12	2·66	14	2·73	10	3·02
13. Loss of anchors or chains	11	1·62	7	1·51	4	0·78	2	0·67
14. Machinery damaged or short of coals	111	16·30	91	19·67	101	19·69	74	21·41
15. Mutiny, sickness, casualty to crew, or refusing duty	5	0·73	6	1·25	3	0·59	4	1·22
16. Ship damaged, loss of sails, bulwarks, &c.	97	14·24	59	12·86	50	9·75	22	6·47
17. Water-logged	—	—	—	—	—	—	—	—
Number of casualties	681	—	462	—	513	—	345	—
Number of steamers	657	—	446	—	483	—	331	—

"Lloyd's List," during the Four Quarters of 1876, *and the respective Percentages thereon, for the same period of the Ten Previous Years.*

Third Quarter.				Fourth Quarter.				Steamers.
1876.		Average Ten Previous Years.		1876.		Average Ten Previous Years.		
Number.	Per-centage.	Number.	Per-centage.	Number.	Per-centage.	Number.	Per-centage.	
—	—	—	—	3	0·36	2	0·36	1. *Missing*
—	—	—	—	—	—	—	—	2. *Abandoned*—
—	—	1	0·13	2	0·24	1	0·19	Recovered Lost
—	—	1	0·16	2	0·24	1	0·26	Total
109	19·06	72	19·35	145	17·47	97	16·64	3. *Collision*— Not damaged
84	14·68	55	14·90	104	12·53	75	12·84	Damaged
12	2·10	6	1·75	9	1·08	8	1·37	Sunk
205	35·84	133	36·00	258	31·08	181	30·85	Total
12	2·10	9	2·37	9	1·08	15	2·66	4. Sinking from causes other than collision
131	22·90	76	20·56	165	19·88	115	19·60	5. *Stranded*— Got off
17	2·97	17	4·47	33	3·98	27	4·67	Not got off
5	0·87	2	0·67	5	0·60	7	1·19	Subsequent fate not reported
153	26·74	95	25·70	203	24·46	149	25·46	Total
—	—	—	—	—	—	1	0·15	6. Capture
—	—	—	—	—	—	—	—	7. Piracy
21	3·67	11	3·02	15	1·80	12	2·08	8. Burnt or on fire
5	0·87	3	0·75	9	1·08	8	1·42	9. Dismasted or disabled
9	1·57	5	1·45	18	2·17	6	0·99	10. Jettison of cargo under deck
1	0·18	1	0·38	5	0·60	9	1·48	11. Jettison of deckload or washed overboard
13	2·27	8	2·18	19	2·29	15	2·52	12. Leaky
6	1·05	1	0·38	11	1·36	7	1·16	13. Loss of anchors or chains
108	18·88	78	21·18	137	16·50	103	17·60	14. Machinery damaged or short of coals
5	0·87	5	1·40	7	0·84	4	0·80	15. Mutiny, sickness, casualty to crew, or refusing duty
34	5·94	18	4·77	134	16·14	71	12·18	16. Ship damaged, loss of sails, bulwarks, &c.
—	—	—	—	—	—	—	—	17. Water-logged
572	—	371	—	830	—	586	—	Number of casualties
552	—	360	—	799	—	569	—	Number of steamers

5.—*A Table showing the Results of Wrecks and Casualties to Ship and to Cargo, with List," during the Four Quarters of* 1876, *and the respective Percentages thereon, Compared*

	Sailing Vessels.							
	First Quarter.				Second Quarter.			
	1876.		Average Ten previous Years.		1876.		Average Ten previous Years.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
Results to Ship—								
Total loss	357	13·35	535	18·48	268	15·26	344	20·66
Constructive loss	33	1·23	53	1·84	25	1·42	38	2·31
Great damage	234	8·75	311	10·73	205	11·68	166	9·96
Minor damage	1,381	51·65	1,424	49·15	707	40·26	728	43·73
Raised after sinking	15	0·56	11	0·37	8	0·46	8	0·51
Not damaged or results unknown	654	24·46	563	19·43	543	30·92	380	22·83
Total	2,674	—	2,897	—	1,756	—	1,664	—
Results to Cargo so far as reported—								
All lost	168	6·28	325	11·24	138	7·86	183	11·00
Part lost	102	3·81	160	5·54	70	3·99	89	5·34
All saved	6	0·22	13	0·47	2	0·11	6	0·36
Forwarded	2	0·8	8	0·27	—	—	5	0·33
Heated	2	0·08	7	0·26	3	0·17	3	0·16
Shifted	13	0·48	46	1·61	16	0·91	18	1·10
Otherwise damaged	48	1·79	42	1·46	24	1·37	27	1·62
Salvage services	225	8·41	298	9·97	147	8·37	145	8·75
Lives—								
Crews saved	251	9·39	271	9·37	185	10·54	156	9·37
Crews drowned	23	0·86	26	0·91	25	1·42	20	1·24
Lives lost so far as reported in both ships and steamers	377	—	374	—	499	—	499	—

Salvage Services, Crews Saved or Drowned and Lives Lost, so far as reported in "Lloyd's with the Average Number and Percentages for the same period of the Ten Previous Years.

Sailing Vessels.								
Third Quarter.				Fourth Quarter.				
1876.		Average Ten previous Years.		1876.		Average Ten previous Years.		
Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	
								Results to Ship—
252	13·06	350	18·94	722	19·35	732	19·91	Total loss
26	1·35	39	2·13	37	0·99	45	1·23	Constructive loss
205	10·63	218	11·78	471	12·62	420	11·42	Great damage
839	43·49	806	43·56	1,613	43·22	1,717	46·70	Minor damage
13	0·67	8	0·45	12	0·32	8	0·22	Raised after sinking
594	30·79	428	23·13	877	23·50	754	20·52	Not damaged or results unknown
1,929	—	1,851	—	3,732	—	3,677	—	Total
								Results to Cargo so far as reported—
105	5·44	176	9·55	284	7·61	364	9·89	All lost
81	4·20	85	4·61	212	5·68	213	5·81	Part lost
4	0·21	5	0·29	5	0·13	9	0·25	All saved
3	0·16	4	0·23	3	0·08	4	0·11	Forwarded
3	0·16	3	0·19	5	0·13	5	0·13	Heated
15	0·78	16	0·87	61	1·63	53	1·43	Shifted
26	1·35	31	1·67	49	1·31	36	0·99	Otherwise damaged
176	9·12	154	8·32	312	8·36	329	8·96	Salvage services
								Lives—
151	7·83	160	8·65	384	10·29	352	9·57	Crews saved
15	0·78	13	0·72	50	1·34	30	0·82	Crews drowned
369	—	246	—	434	—	587	—	Lives lost so far as reported in both ships and steamers

5.—*A Table showing the Results of Wrecks and Casualties to Ship and Cargo,*

	Steamers.							
	First Quarter.				Second Quarter.			
	1876.		Average Ten previous Years.		1876.		Average Ten previous Years.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
Results to Ship—								
Total loss	39	5·94	39	8·71	31	6·42	27	8·13
Constructive loss	2	0·30	3	0·67	2	0·41	2	0·61
Great damage	49	7·46	31	7·08	34	7·04	25	7·59
Minor damage	298	45·36	198	44·29	206	42·65	140	42·36
Raised after sinking	2	0·30	3	0·65	2	0·41	3	0·94
Not damaged or results unknown	267	40·64	172	38·58	208	43·07	133	40·37
Total	657	—	446	—	483	—	331	—
Results to Cargo so far as reported—								
All lost	15	2·28	17	3·76	8	1·66	10	3·05
Part lost	24	3·64	16	3·67	21	4·33	16	4·75
All saved	1	0·15	1	0·20	—	—	1	0·18
Forwarded	—	—	—	—	—	—	—	—
Heated	2	0·30	—	—	1	0·21	—	—
Shifted	10	1·52	7	1·59	2	0·41	2	0·64
Otherwise damaged	19	2·89	10	2·17	16	3·31	7	2·06
Salvage service	43	6·54	33	7·37	46	9·52	28	8·50
Lives—								
Crews saved	16	2·44	18	4·10	13	2·69	12	3·63
Crews drowned	4	0·61	3	0·72	—	—	1	0·30
Lives lost so far as reported in both ships and steamers (see Sailing Vessels, *supra*)	—	—	—	—	—	—	—	—

with Salvage Services, Crews Saved or Drowned and Lives Lost—Contd.

Steamers.								
Third Quarter.				Fourth Quarter.				
1876.		Average Ten previous Years.		1876.		Average Ten previous Years.		
Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	
								Results to Ship—
37	6·70	31	8·67	51	6·38	51	9·03	Total loss
1	0·18	2	0·50	2	0·25	2	0·37	Constructive loss
33	5·98	30	8·39	59	7·38	43	7·56	Great damage
233	42·21	143	39·91	366	45·81	234	41·24	Minor damage
5	0·91	3	0·75	6	0·75	5	0·84	Raised after sinking
243	44·02	150	41·77	315	39·43	233	40·95	Not damaged or results unknown
552	—	360	—	799	—	569	—	Total
								Results to Cargo so far as reported—
9	1·63	11	3·11	18	4·25	18	3·13	All lost
18	3·26	14	4·00	34	4·26	23	4·10	Part lost
—	—	—	—	—	—	1	0·14	All saved
—	—	—	—	—	—	—	—	Forwarded
—	—	—	—	1	0·13	—	—	Heated
4	0·72	2	0·64	20	2·50	11	1·93	Shifted
11	1·99	8	2·33	15	1·88	12	2·22	Otherwise damaged
48	8·70	24	6·75	60	7·51	39	6·96	Salvage service
								Lives—
21	3·80	13	3·53	30	3·76	18	3·16	Crews saved
—	—	—	—	4	0·50	1	0·30	Crews drowned
—	—	—	—	—	—	—	—	Lives lost so far as reported in both ships and steamers (see Sailing Vessels, *supra*)

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	£26	15	6
Discount 40 per cent. (*allowed to Members only*)	10	14	2
	£16	1	4

Sets, or single copies of any number, of the *Journal* (not out of print), can be obtained of the publishers, E. Stanford, 55, Charing Cross, London, S.W.

Members only, can obtain sets or single copies of any number of the *Journal*, at the Society's Rooms, Somerset House Terrace, Strand, London, W.C. (King's College Entrance).

By a resolution of the Council, dated 12th May, 1854, the price of back numbers of the *Journal* of the Society, charged to Members, was raised from one-half to three-fifths of the publishing price.

NOTE.—One or two numbers of the *Journal* are now out of print.

JOURNAL OF THE STATISTICAL SOCIETY,

SEPTEMBER, 1877.

REPORT *of the* COUNCIL *for the* FINANCIAL YEAR *ended* 31*st December*, 1876, *and for the* SESSIONAL YEAR *ended* 26*th June*, 1877, *presented at the* FORTY-THIRD ANNIVERSARY MEETING *of the* STATISTICAL SOCIETY, *held at the Society's Rooms, Somerset House Terrace (King's College Entrance), Strand, W.C., London, on the* 26*th of June*, 1877, *with the* PROCEEDINGS *of that Meeting.*

JAMES HEYWOOD, ESQ., F.R.S., *President, in the Chair.*

THE SECRETARY read the circular convening the meeting.

The minutes of the last ordinary meeting were read and confirmed.

The following report was then read:—

Report of the Council.

The Society is now in the forty-third year of its existence, and fully maintains the position it has obtained as respects the number of its members, and its power to fulfil the objects for which it was established.

In the past year the changes in the *personnel* of the Society show a small increase on balance. The result compares as follows with the average of the previous ten years:—

Particulars.	1876.	Average during the Last Ten Years.
Number of Fellows on 31st December	611	454
Life Members included in the above	90	69
Number lost by death, withdrawal or default	46	24
New Fellows elected	50	48

The Society is thus rather more than able to recruit its numbers annually, and since the close of the calendar year a much more favourable account could have been presented, about eighty new members having been elected since the 1st January last.

The financial condition of the Society treated in the same manner shows a highly satisfactory result.

Particulars.	1876.	Average of Last Ten Years.
	£	£
Balance at beginning of year	94	262
Receipts from all sources	1,438	990
Cash balance at end of year	192	241
Surplus of assets over liabilities	3,277	2,091

The resources of the Society have thus increased during the year, and the improvement has continued up to the present time. The Society may be considered to have almost entirely got over the temporary drain upon its funds caused by the removal to the present premises.

The inaugural address of the president was given on the re-assembling of the Society in November, and the papers read and the members elected at each of the monthly meetings are recorded below :—

Session 1876-77.

First Ordinary Meeting, Tuesday, 21st November, 1876.

The President, James Heywood, Esq., F.R.S., in the Chair.

The following were elected Fellows :—

Sir Henry Peck, Bart., M.P.
Thomas Jaques Martin, A.I.A.
George H. Evans, M.D.
T. Kyffen Freeman.
William John Aitchison.
Sir Joseph N. McKenna, M.P.
James Graham.
Arthur Fraser Walter.
Thomas Fitzroy Rice.
Edwin James Pearson.
George E. Abell.
William Thorne.
Robert Allan McLean.
Sir Thomas Douglas Forsyth, C.B., K.C.S.I.
Sydney Smith.
Thomas Williams Aldwinckle.
Horace George Bowen.

(*a*) The President read his "Inaugural Address," and presented the Howard Medal (with 20*l.*), awarded by the Council, to

Dr. J. C. Steele, Medical Superintendent of Guy's Hospital,

for his Essay on "The Mortality of Hospitals (General and Special) "in the United Kingdom in Times Past and Present."

(*b*) Dr. Mouat, F.R.C.S., read a report on "The Ninth Inter-"national Statistical Congress held at Buda-Pesth in September, "1876."

Second Ordinary Meeting, Tuesday, 19th December, 1876.

The President, JAMES HEYWOOD, Esq., F.R.S., in the Chair.

The following were elected Fellows:—

William Ansell Day.	Thomas Smith, M.D.
Henry Harcourt Hyde Clarke.	William Orange, M.D.

Major Thomas Freeman Dowden, R.E.

(*a*) Professor Leone Levi read a Paper on "The Statistical "Results of the Treaties of Commerce, and their Relation to the "Balance of Trade."

(*b*) Mr. Stephen Bourne read a Paper on "The Growing Pre- "ponderance of Imports over Exports in the Trade of this "Country."

Third Ordinary Meeting, Tuesday, 16th January, 1877.

The President, JAMES HEYWOOD, Esq., F.R.S., in the Chair.

The following were elected Fellows:—

Samuel Newington, M.A., M.R.C.P. | Thomas Groom Corley.

"Mr. F. G. P. Neison read a Paper on "Some Statistics of the "Affiliated Orders of Friendly Societies" (Odd Fellows and Foresters).

Extra Ordinary Meeting, Tuesday, 30th January, 1877.

The President, JAMES HEYWOOD, Esq., F.R.S., in the Chair.

Mr. Archibald Hamilton read a Paper on "The Recent "Economic Progress of New Zealand."

Fourth Ordinary Meeting, Tuesday, 20th February, 1877.

The President, JAMES HEYWOOD, Esq., F.R.S., in the Chair.

The following were elected Fellows:—

Richard Metcalfe.	William A. Stone.
Charles Wallington.	Edward Moore.
Henry Matthews Phillips.	Richard Henry Holmes.
Frederick Richard Harold.	Henry M. Paul.
George Chandler.	Charles John Schneidau.
Julius Althaus, M.D.	Arthur Bayfield.
Thomas Rawlins.	Robert Crothers, M.D.
James William Kealy.	Philip Capell Hanbury.
Henry Dever.	Reginald Prance.
William Welch Deloitte.	Robert Gordon Mullen.
Arthur Good.	John Lewis.
Theodore Brooke Jones.	Frederick Robertson Goddard.
Samuel Dyer Nix.	Benjamin Francis Cobb.
Howard S. Smith.	Charles Schiff.
Robert Ferguson Miller.	John Ferrier.

Mr. Cornelius Walford read a Paper on "Fires and Fire "Insurance considered under their Historical, Financial, Statistical, "and National Aspects."

Fifth Ordinary Meeting, Tuesday, 20th March, 1877.

The President, JAMES HEYWOOD, Esq., F.R.S., in the Chair.

The following were elected Fellows:—

Samuel Vesey Tiddy.
W. H. Sainsbury Gilbert.
Harry George Bolam.
Thomas Fenwick Hedley.
Isaac Holden.
Charles Pink.
Cecil N. Lane.
Edward Harold Carter.
Lionel Louis Cohen.
The Baron Henry de Worms.
Thomas John Woodrow.
William J. Beadel.
Josiah Martin, F.I.A.
A. E. Bateman.
John Gibson Youll.
Richard Ormond.

The undermentioned were elected Honorary Members:—

Signor Cesare Correnti, of Italy, President of the Geographical Society of Italy; Membre de la Chambre des Députés; Membre de la Conseil d'Etat.

His Excellency Ahmid Vefyk Pasha, of Turkey, has held many of the high Offices of the State, and is chief person of the few that have been engaged on duties of a statistical nature in Turkey; honorary member of the Statistical Society of Paris.

M. Max Wirth, of Austria, formerly Chief of the Statistical Bureau of Switzerland. One of the Editors of the Vienna "Freie Presse."

Dr. G. Mayr, of Bavaria, Director of the Royal Bureau of Statistics, Bavaria.

M. A. Vesselovsky, of Russia, Attaché to the Imperial Minister of Finance.

Dr. H. Brachelli, of Austria, Chief of the Bureau of Commercial Statistics at Vienna.

Henry Jordan, Esq., of Queensland, Registrar-General.

Edward Young, Esq., of the United States of America, Chief of the Bureau of Statistics at Washington.

Captain P. G. Craigie read a Paper on "The Cost of English "Local Government."

Sixth Ordinary Meeting, Tuesday, 17th April, 1877.

The President, JAMES HEYWOOD, Esq., F.R.S., in the Chair.

The following were elected Fellows:—

John Cabourn Simonds.
George Wright.
Thomas Huskinson.
The Rev. Ernest H. Fothergill, B.A.
Joseph Allen.
Emanuel Boutcher.

G. J. Shaw-Lefevre, M.P.

Mr. Frederick Martin's Paper on "Births, Deaths, and "Marriages, and the Comparative Progress of Population in some "of the Principal Countries of Europe," was read by Mr. Walford.

Seventh Ordinary Meeting, Tuesday, 15th May, 1877.

The President, JAMES HEYWOOD, Esq., F.R.S., in the Chair.

The following were elected Fellows:—

Daniel Leggatt, LL.D.	Frederick Fearon.
John Blundell Maple.	Crochley Clapham, L.R.C.P.
R. Denny Urlin (Barrister-at-Law).	William Percy Payne.
John Smith (Accountant).	William Henry Michael.
William S. Ogle (Accountant).	Richard Price Williams.
Herbert S. Skeats.	Henry Clarke, L.R.C.P.
Edward Stanford (Publisher).	Edwin William Barton, L.R.C.P.
Robert Porter.	George Henry Tatham (Surveyor).
William Mort.	John E. Taylor.

Mr. E. W. Brabrook read a Paper on "International Statistics "of Savings Banks."

Eighth Ordinary Meeting, Tuesday, 19th June, 1877.

The President, JAMES HEYWOOD, Esq., F.R.S., in the Chair.

The following were elected Fellows:—

Frank O. Karuth.	Hubert Airy, M.D.
Henry Downs.	Richard Fawcett Battye, M.R.C.P.
Henry Edward Waddy, L.R.C.P.	George Houlton Bishop, M.R.C.S.

Evan Marlett Boddy, L.R.C.P.

Mr. E. G. Ravenstein read a Paper on "The Populations of "Russia and Turkey;" after which diagrams "illustrating the "accounts of the Banks of England, France, Germany, Austria, "Belgium, Holland, and Russia," were submitted, with remarks thereon, by Mr. E. Seyd.

The Society was duly represented by delegates at the meetings of the British Association, at Glasgow; the Social Science Association, at Liverpool; and the Ninth International Statistical Congress, at Buda-Pesth; in the proceedings of all of which they took part.

A preliminary report on the proceedings of the Congress was read by Dr. Mouat, as will be seen from the above statement, at the Society's meeting, in November, and this report he has promised to supplement by a special paper at an early meeting of next session, giving a *résumé* of the resolutions adopted by the Congress, and discussing the business arrangements of such congresses, and the means of amending them, so as to make them more useful to the spread of statistical knowledge.

The report of the resolutions adopted at the Congress, and the more important statistical works presented to it, have been placed in the library of the Society.

The Howard Medal for 1876 was awarded to Dr. J. C. Steele, Medical Superintendent of Guy's Hospital, for his essay, "On the "Mortality of Hospitals (general and special) in the United "Kingdom in times past and present."

Dr. Steele has been good enough to prepare an abstract of his essay, which will appear in the forthcoming (June) number of the Society's *Journal*.

The subject of the Essay for the present year is—

"On the Condition and Management, Past and Present, of the "Workhouses and similar Pauper Institutions in England "and Wales, and their Effect on the Health, Intelligence, "and Morals of the Inmates."

The subject of the Essay for the Howard Medal of 1878 is—

"The effects of Health and Disease on Military and Naval "Operations."

It has been decided by the Council to grant a sum of 20*l.* to the writer who gains the Medal.

The following list of Fellows proposed as Officers and Council of the Society for the Session 1877-78, is submitted for the consideration of the meeting:—

Council and Officers for 1877-78.

PRESIDENT.

*GEORGE J. SHAW-LEFEVRE, ESQ., M.P.

COUNCIL.

*Edward William Brabrook, F.S.A.	Francis Jourdan.
The Right Hon. Lord Borthwick.	H. Reader Lack.
Stephen Bourne.	Professor Leone Levi, LL.D.
Hammond Chubb, B.A.	William Golden Lumley, Q.C., LL.M.
Hyde Clarke, D.C.L.	Richard Biddulph Martin, M.A.
John Cleghorn, M.A.I.	Frederic John Mouat, M.D.
*Juland Danvers.	Robert Hogarth Patterson.
Right Hon. Earl Fortescue.	Frederick Purdy.
Francis Galton, F.R.S.	Ernest George Ravenstein, F.R.G.S.
Robert Giffen.	Sir R. W. Rawson, C.B., K.C.M.G.
Archibald Hamilton, J.P.	Ernest Seyd.
James Thomas Hammick.	Thomas Sopwith, M.A., F.R.S.
Frederick Hendriks.	William Tayler, D.L., F.S.A.
Henry Jeula, F.R.G.S.	*Cornelius Walford, F.S.A
*Prof. W. S. Jevons, M.A., LL.D., F.R.S.	*Thomas Abercrombie Welton.

Those marked * are new Members of Council.

TREASURER.

Richard Biddulph Martin, M.A.

SECRETARIES.

Hammond Chubb, B.A. | Robert Giffen.
Professor William Stanley Jevons, M.A., LL.D., F.R.S.

FOREIGN SECRETARY.

Frederic J. Mouat, M.D.

The abstract of receipts and expenditure, and the balance sheet of assets and liabilities to the 31st of December, 1876, are subjoined, together with the Auditors' report for the same year.

(I.)—Abstract *of* Receipts *and* Payments, Year *ended* 31*st* December, 1876.

RECEIPTS.

		£	s.	d.
Balance in Bank, 31st December, 1875	£74 – 9			
Balance of Petty Cash	8 9 10½			
Balance of Advertisement Cash	11 11 1			
		94	1	8½
Dividends on Stock (viz., on 1,271*l.* 4*s.* 8*d.* New 3 per Cent. Bank of England)		37	14	9
Subscriptions:—				
42 Arrears	£88 4 –			
450 for 1876	945 – –			
10 in Advance	21 – –			
		1,054	4	–
Compositions (8)		168	–	–
Journal and Almanac Sales	£159 2 –			
Journal by Advertisements	19 – 8			
		178	2	8
		£1,532	3	1½

PAYMENTS.

		£	s.	d.
Rent		95	–	–
Salaries, Wages, and Pension		302	10	–
Journal, Printing	£500 19 –			
„ Shorthand Reporter	18 18 –			
„ Literary Services	4 12 –			
		524	9	–
Advertising		76	3	8
Ordinary Meeting Expenses		15	17	7
Library		75	7	10
Stationery and Sundry Printing		67	2	3
Postage, &c.		58	11	3
Fire and Lights		16	15	8
Incidental Expenses		70	4	6
Furniture and Repairs		13	12	1
Howard Medal		1	10	–
Statistical Dinner Club		3	–	–
Special Gift with Howard Medal (Mr. Heywood's Gift)		20	–	–
		£1,340	3	10
Balance at Messrs. Drummond's, less drafts not presented	£186 11 4			
Balance of Petty Cash	– – 6½			
Balance of Advertisement Cash	5 7 5			
		191	19	3½
		£1,532	3	1½

(II.)—Balance Sheet *of* Assets *and* Liabilities *on* 31*st* December, 1876.

LIABILITIES.

	£	s.	d.	£	s.	d.
Accounts for—						
December number of *Journal*	131	15	9			
Annual Index to ditto	5	5	–			
Stationery and Printing	25	15	3			
Miscellaneous	24	8	–			
				187	4	–
Balance in favour of the Society				3,277	4	4½
				£3,464	8	4½

ASSETS.

	£	s.	d.
Cash Balances	191	19	3½
Stock:—			
New 3 per Cent. Consols (1,271*l.* 4*s.* 8*d.*), cost	1,207	7	1
Property (Estimated Value):—			
Books in Library £1,000			
Journals in Stock 500			
Furniture and Fixtures 500			
	2,000	–	–
Arrears of Subscriptions recoverable (say)	65	2	–
	£3,464	8	4½

(III.)—Building Fund (Established *by* Council, 10*th July*, 1873).

LIABILITIES.

	£	s.	d.
Donation (1873) from Sir Francis Goldsmid	100	–	–
Ditto from Sir Charles Dilke	20	–	–
Interest, per London and Westminster Bank	5	8	–
	£125	8	–

ASSETS.

	£	s.	d.
Metropolitan 3½ per Cent. Consolidated Stock (123*l.* 1*s.* 11*d.*) cost	125	8	–
	£125	8	–

"*Auditors' Report*, 1876.

"STATISTICAL SOCIETY,

"KING'S COLLEGE ENTRANCE,

"STRAND, W.C., LONDON,

"*9th April*, 1877.

"The Auditors appointed to examine the Accounts of the Society, herewith

"REPORT:—

"That they have carefully compared the Entries in the Books with the several *Vouchers* for the same, from the 1st January to the 31st December, 1876, and find them correct, showing the *Receipts* (including a Balance of 94*l.* 1*s.* 8½*d.* from 1875) to have been 1,532*l.* 3*s.* 1½*d.*, and the *Payments* 1,340*l.* 3*s.* 10*d.*, leaving a Balance in favour of the Society of 191*l.* 19*s.* 3½*d.*

"They have also had laid before them an estimate of the *Assets* and *Liabilities* of the Society, the *former* amounting to 3,464*l.* 8*s.* 4½*d.*, and the *latter* to 187*l.* 4*s.* –*d.*,—leaving a Balance in favour of the Society of 3,277*l.* 4*s.* 4½*d.*

"They further find that at the end of the year 1875 the number of Fellows on the list was 607, which number was diminished in the course of the year to the extent of 46 by Deaths, Resignations, and Defaulters, and that 48 new Members were elected and two Fellows were restored to the list, leaving on the list, on 31st December, 1876, 611 Fellows of the Society.

"The Balance standing to the credit of the Building Fund, at the end of the year 1876, was 125*l.* 8*s.* –*d.*

(Signed) "WILLIAM TAYLER,
"CORNELIUS WALFORD,
"J. B. BROWN,
} *Auditors.*"

The PRESIDENT moved: "That the Report of the Council, the Abstract of Receipts and Payments, the Balance Sheet of Assets and Liabilities, and the Auditors' Report for 1876, be adopted, entered on the minutes, and printed in the *Journal*." He said the report gave a satisfactory account of the state of the Society. The numbers were gradually increasing, and those who had attended the meetings must have been gratified with the papers that had been read, and the able discussions which had followed them. A permanent number of about 700 members characterises the Society at the present time.

Dr. FARR seconded the motion. In doing so he said he wished to refer to a matter in which some of the members of the Society were particularly concerned. The British Association would meet at Plymouth on 15th August, Earl Fortescue being the President of Section F, Economic Science and Statistics; and Lord Morley and Sir Thomas Dyke Acland, Vice-Presidents. It was very desirable that the members of the Statistical Society should put in a strong appearance at Plymouth. The Society had been associated with the British Association from the very first. He had in his hand a paper in which Mr. Babbage gave an interesting account of the origin of the Statistical Society and of Section F of the British Association. M. Quetelet came over to Cambridge with some valuable statistical papers, and was told that there was no section in which they could be read. A committee was there and then constituted, of which Mr. Babbage was chairman. That committee adjourned to London, and from that beginning the Statistical Society had its origin. Thus the British Association gave rise to the Statistical Society. The question had now been raised whether it was desirable that the connection, through Section F, between the Society and the Association should be maintained. At a meeting of the Council of the British Association a committee was appointed "to consider and report on the possibility of excluding unscientific or otherwise unsuitable papers and discussions from the sectional proceedings of the Association." The committee consisted of Mr. Francis Galton, Mr. Slater, and other gentlemen, who did not know much about the early proceedings of the Statistical section, and they reported, "That papers which have been reported on unfavourably by the organising committees shall not be brought before the sectional committees. The president shall call on one of the secretaries to read the minutes of the previous meeting of the committee, and secondly no paper shall be read until it has been formally passed by the committee of the section, and entered on the minutes accordingly." Every one present here would agree that the statistical papers submitted to the British Association should be carefully scrutinised, but the report went on to say, "That having regard to the subjects of many papers read in the Section of Economic Science and Statistics, and the nature of the discussions thereon, the growth of the purely scientific branches of the Association, and to the fact that a society has been specially formed for the discussion of social and economical questions, the Council be requested seriously to consider whether the time has not now

arrived when the section might cease to form a part of the British Association." What he wished to consult the Society upon was the propriety of considering that question. The Council of the British Association passed the two first resolutions, to which neither I nor you probably would object, and then added another, "That the committee be requested to report more fully to the Council on the subject of the suggestion contained in the concluding paragraph of the report." He (Dr. Farr) was present at the meeting of the Council, and he stated that he was not prepared to discuss the subject then, but wished to consult the Statistical Society, which had always taken a deep interest in the section. What he proposed to do was to write an official letter to the secretaries, and submit this question to their Council:—Whether they thought it desirable that the friendly though unofficial connection that had existed so long between the Society and the British Association should be maintained or not. The Society did not want the patronage of even the British Association, but the science which they cultivated was one of the most important that men could pursue. If animals, fish, insects, and inorganic matter were of great interest in a scientific point of view, surely the phenomena of society, population, life, and property were of still greater importance. His own feeling was that it would be undesirable to break off the connection which had so long existed. The object of the British Association was to give a stronger impulse in a more systematic direction to scientific inquiry. To accomplish that they invited men cultivating different branches of science to meet together, so as to promote intercourse between them. That was a most desirable object. It was very difficult for men connected with other branches of science to appreciate the work of the Statistical Society, and it, perhaps, was still more difficult for those engaged in the study of statistics to appreciate the researches in Kent's Cavern, and the minute details of some other branches of science, touching things of no immediate practical value. Another object of the Association was to draw attention to scientific matters in the country. For these reasons he thought it very desirable that the connection should be maintained, both for the sake of the Society and for the sake of the Association. He had a list of the papers that had been read before Section F. Many of them were by some of the most eminent and distinguished Fellows of this Society, and would bear comparison with any read before other sections. Mr. Griffiths had suggested that latterly there had not been that intimate relation between the officers of the Statistical Society and the officers of the British Association which formerly existed, when one of the secretaries of the Society, or delegates specially appointed, took an active part in the organisation of the statistical section. It would be very desirable to keep up that arrangement, and to invite one of the secretaries to attend. He hoped that some good papers would be sent down to Plymouth so as to maintain the character of the section. There was no ill-feeling, but the contrary on the part of the Council of the Association.

He (Dr. Farr) also wished to state that the permanent committee of the Statistical Congress, of which Mr. Giffen was a member, would meet in Rome in September, and take into con-

sideration the organisation of the Congress, which had been criticised by the Society's Foreign Secretary. And M. Keleti had written to say that he hoped Dr. Mouat would attend. He would therefore suggest that Dr. Mouat should be asked to be good enough to attend as a representative of the Society. He thought the members had every reason to congratulate themselves on the independent position which the Society held, and on the work it had done, and he trusted that still more and better work would be accomplished in the future.

In reply to Mr. Doxsey, Dr. Farr said the Statistical Society was in no way responsible for the papers read by Fellows before the Section F of the British Association.

The PRESIDENT said the manner in which papers were selected for the British Association was this. The Organising Committee met a day or two before the meeting of the Association, looked over the papers, and decided which should be read. They then handed over to the committees of the sections those which they approved of.

Mr. NEISON asked if the Committee of the British Association which proposed the abolition of the Economical Section, were not influenced in coming to that conclusion by the fact that the Statistical Society already thoroughly occupied the ground, and that therefore there was not the same necessity for papers on statistical research and economic science as formerly. If that were so, the proposed abolition was rather a compliment to the Society.

Dr. FARR said there were other societies in a similar position, such as the Chemical Society, and the Linnæen Society, but it was not therefore suggested that it was unnecessary to have a Chemical or a Biological Section.

Sir RAWSON RAWSON said he presumed that the question arose in the Council of the British Association, not because of any paper read in the Economic Section, but because of the paper on Spiritualism, read in the Biological Section, and that Mr. Sclater, and one or two others, took the opportunity of suggesting that Economic Science was not so pure and exact as some of the other sciences, and that as there was a Social Science Congress it was not necessary that statistics and economics should be represented at the British Association. But every branch of the Association was represented by a society, and more than one by Annual Congresses, that met in different parts of the Kingdom. The abolition of the Economic Section would be a material loss to the places in which the Association met. There was a certain number of distinguished visitors who were attracted chiefly by this section, and in each place of meeting were a large number of persons who took little or no interest in pure physical science, but who did take an interest in statistical science, and who were led to inquire into local questions for the purpose of bringing the subject before the Economic Section, and it would be a serious loss to the inhabitants

generally of the towns where the meetings were held, if the section were abolished. He thought that was an important reason why the connection between the Association and the Society should be continued. If it were not, there would be a diminished number of subscribers to the Association, and less interest shown in the proceedings. With regard to the suggestion that one of the secretaries should be sent to the meetings of the Association, the Royal Geographical Society not only sent one but two representatives at the expense of the Society. Of course, it would not be right to ask the secretaries to go at their own expense. If it were necessary to have the sanction of a general meeting, he hoped steps would be taken to obtain it, but he thought the Council of the Society had the power to arrange it.

The President said there was always an under-current in human affairs, and it so happened that the reporters who attended the meetings of the British Association, were more familiar with the subjects dealt with in the Statistical Section than with those discussed in other sections. The consequence was that the reports of that section occupied a larger portion of the daily press than,—except under unusual circumstances, when something extraordinary happened,—the reports of other sections. There was therefore some difficulty; he did not wish to use such a word as jealousy. The proper way to meet it was for gentlemen of the press to be sent there who could describe subjects of physical science in a popular way. He did not wish to diminish the popularity of physical science, one branch of which he was very much attached to, and it was only right that the press should report the best papers in physical science as well as those in statistical science. There would then perhaps be greater cordiality and sympathy between the statistical division and the physical science divisions, than at the present moment.

The resolution was agreed to.

Mr. Neison and Mr. Bourne were appointed scrutineers of the ballot, and the ballot being taken, the gentlemen named in the printed list were declared to be unanimously elected as the council and officers of the Society for the ensuing year.

The President announced that the subject of the Howard Medal Essay for 1878 would be "The Effects of Health and Disease on Military and Naval Operations."

Dr. Guy moved: "*That the best thanks of the meeting be given to the retiring President, Vice-Presidents, Council, and Officers, for their valuable services during the past year.*" There could be no doubt whatever, he said, that every one present would enter heartily into the spirit of this resolution. The President during his two years of office, had been most regular in his attendance, and the Society was extremely obliged to him for several acts of munificence. He had been good enough to add to the value of the Howard medal by two contributions of 20*l.* each, a sum likely to

be acceptable to candidates for the medal, who had expended money and time in preparing their papers. They had also to thank Mr. Heywood for an extremely elegant entertainment at South Kensington, than which he (Dr. Guy) had never seen anything better managed or more liberally conducted in every way. The other gentlemen referred to in the resolution had also done excellent service. Amongst other things he might mention the editing of the *Journal* as having being most satisfactorily performed. He was sorry to think there could be any likelihood of the connection with the British Association ceasing. There were some people, purists in science, who denied to statistics the name of a science; but if all statistics were not scientific, there were some statistical essays which were purely and eminently scientific. Science was many sided, and the members of the Statistical Society cultivated one particular branch to the best of their ability. If papers were offered to the British Association which were undeserving of the name of science (papers relating to subjects not tested by experience, or properly supported by numerical details), they ought to be excluded, but if they were worthy of the name they should be accepted.

Mr. Sopwith seconded the motion. He said the President had set an excellent example to the other officers, and no one could have been more indefatigable in attending to every duty connected with the office. He was quite sure that the motion would meet with the warm and cordial approval of all present.

The resolution was agreed to unanimously.

The President thanked the members for their kindly vote, and moved a vote of thanks to the scrutineers for their services.

Dr. Mouat seconded the motion, which was unanimously agreed to.

Mr. Neison acknowledged the vote, and the proceedings then terminated.

Fires *and* Fire Insurance Considered *under their* Historical, Financial, Statistical, *and* National Aspects. *By* Cornelius Walford, F.I.A., F.S.S., *Barrister-at-Law, and Fellow of the Royal Historical Society, &c., &c.*

[Read before the Statistical Society, 20th February, 1877.]

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In the preparation recently of the history of fire insurance for the purposes of my "Insurance Encyclopædia," I have taken occasion to illustrate every part of the subject (where practicable) with statistics in the form of tables, or otherwise. As much of the data so brought together is the result of considerable research, involving alike time and labour, being drawn from sources not generally available, while portions of it have a direct bearing upon our national progress and prosperity, I have thought that a pretty full summary of such statistics, and of the historical notes necessary to their complete understanding, may be well adapted to the pages of the *Journal* of this Society. Some of the considerations presented, I venture also to believe, may afford fitting scope for profitable discussion in this assembly.

The general arrangement of this paper is chronological and statistical. After careful observation and experiment, I have been compelled to the conclusion that there is no other efficient method of recording actual facts. Where the two processes admit of combination, as they usually do, the greatest clearness should be attained; but where the materials are incomplete and disconnected, the processes employed can do no more than make the best of the facts as they stand. This observation particularly applies to the present case. The materials with which I have to deal have been collected and compiled by different individuals, at different dates, and for varying objects. There has been hardly any common standpoint; and the shape and connection they take here is that

which I have had to give them in view of their general usefulness. When the International Statistical Congress shall succeed in convincing the Governments of the world that the facts of which I here treat are worthy of systematic record, we may hope for better results.

I.—*Fire Protection.*

No survey of the leading incidents concerning fires and fire insurance can be regarded as complete which does not take into account the appliances for the extinguishment of fires; and not only these, but also the general measures for protecting against fire in regard to the construction of buildings, storage of inflammable and combustible goods, the water supply of towns and cities in this connection, the punishment for wilful fire raising, and other obvious considerations. And yet to deal with all or any of these in general detail, would constitute the basis for an elaborate paper in itself; I can, therefore, but touch upon this portion of the subject superficially.

Under the law of Moses wilful fire raising was punishable with death. It appears to have been so under the still earlier law of the Egyptians. The practice of wilfully firing buildings appears to have been very common with the ancient Romans; and those found guilty of it were burned to death, enveloped in the *tunica molesta:* a garment made of paper, flax, or tow, and smeared over with pitch, bitumen or wax; so that when brought to the place of execution, and the fire lighted, there was no chance of their escaping!

The Emperor Augustus, who wore the purple at the time of the birth of our Saviour, appointed seven bands of firemen in the imperial city, each of which had the care of two divisions (*regiones*); each band had a captain (*tribunus*); and at the head of the whole body was the prefect of the watch (*præfectus vigilium*).

Fire engines were known to the Romans. They are said to have been known in China long anterior to the founding of the Roman empire.

872.—All dwelling houses and buildings in Great Britain—after the Roman occupation—down to the time of Alfred the Great were built of timber, generally with a reed thatch. Alfred began to build his palaces of brick and stone; but the nobles did not follow the example for several centuries later.

This monarch ordered the inhabitants of Oxford to cover up their fires every night at the ringing of the bell at "curfew." The fires being then open upon the hearths, an instrument of iron or copper was specially devised for the purpose.

900.—About this date Pope John IX ordered bells to be used in churches, as a defence, by ringing them, *against thunder and*

lightning! Du Fresnoy informs us that they were anointed and baptised in view of their holy office. They were also consecrated with most imposing ceremonies, being washed inside and outside with holy water, holy oil, &c. And it has been inferred, rather than directly asserted, that the ringing of such bells at nightfall was to be regarded as a religious offering for protection against fire during the hours of darkness. The curfew bell was not improbably associated with this belief.

1066.—William the Conqueror ascended the throne of Great Britain, and very speedily made general in this country the continental custom of the "curfew [*couvre feu*] bell,"—which was rung at eight o'clock, when all fires and lights had to be extinguished, under a severe penalty,—perhaps as much as a measure of good government as a protection against fire; but the latter was the plea. Some of our historians appear to regard the measure as aimed at the liberty of the subject, and speak of its introduction as the "odious tyranny of the Conqueror." It is certain that the practice prevailed generally in the cities of Europe at this date, and in many of the English cities, which latter required measures of protection quite as much as any continental city. We regard it as clearly established now that the practice had been introduced into England by Alfred, or probably earlier.

1100.—The "tyranny" of the curfew is said to have been abolished—that is probably the fines and penalties attaching thereto. The practice of ringing the eight o'clock bell continued for many centuries later; and is even now practised in towns and villages in various parts of England. See recent discussion thereon in "Notes "and Queries."

1136.—At this date the greater part of London was still built of wood, and the houses were covered with straw, stubble and the like. Hence it happened that when a single house caught fire the entire city was endangered. The "Liber Albus," which all who know its history regard as of great authority, says: "A thing that took "place in the first year of the reign of King Stephen [1136], when "by reason of a fire that broke out at London Bridge the church "of St. Paul was burnt: from which spot the conflagration "extended, destroying houses and buildings, as far as the church of "St. Clement Danes." After this, continues the chronicle, the citizens, to the best of their ability, to avoid such a peril, built stone houses upon their foundations, covered with thick tiles, and so protected against the fury of the flames; whence it has often been the case that when a fire has broken out in the city, and has destroyed many buildings, upon reaching such houses it has been unable to go further, and has there been extinguished.

1189.—The first reference we find to any legislative measures

for fire prevention in the city occurs this year, reign of Richard I. It was this monarch who appointed the first lord mayor of London; and this first lord mayor, Henry Fitz-Alwin, goldsmith, issued an order (this year) "concerning buildings between neighbours." The party-wall was to be at least sixteen feet in height, and three feet in breadth, and was to be built of stone, "for security "against fire." These walls, as well as gutter to receive and convey the water from their houses, were to be provided at the common cost. Also "concerning digging pits for water."—Stow's "Chronicle." Anderson says that the order was that "no houses "should be built within the city but of stone;" and that they "should be covered with slate or burnt tile."

The good example here indicated was taken up warmly, and we find it recorded that in the same year the wardmotes of the city arranged the following rules for preventing loss of life and destruction of property by fire:—

Item. That all persons who dwell in great houses within the ward have a ladder or two ready and prepared to succour their neighbours in case misadventure should occur from fire.

Item. That all persons who occupy such houses have in summer time, and especially between the Feast of Pentecost and the Feast of St. Bartholomew (24th August), before their doors a barrel full of water for quenching such fire, if it be not a house which has a fountain of its own.

Item. That ten reputable men of ward, with the aldermen, provide a strong crook of iron with a wooden handle, together with two chains and two strong cords, and that the handle have a good horn and loudly sounding. Of persons wandering by night, it is forbidden that any person shall be so daring as to be found wandering about the streets of the city after the curfew rung out at St. Martin's-le-Grand and St. Lawrence, upon pain of being arrested.

This may be regarded as the first *fire ordinance* of the city of London. (See 1246 and 1667.)

1240.—Under the custom of *Furnes*, prevailing in parts of Europe at this date, the whole property of a person wilfully causing a fire was forfeited, and he banished. His property was applied in restitution to sufferers.

1246.—An ordinance "previously issued" [? 1189] was renewed, to the effect that all houses within the city should be covered with tiles or slates instead of straw, more especially such as stood contiguous to the best streets, which were then but few. What is now the heart of the city about Cheapside was then a void place called Crownfield, from the Crown Inn there; the bulk of the city lay more eastward.—*Anderson.*

1268.—A night-watch for the city of London was first appointed.

1285.—In this, the thirteenth year of Edward I, an Act was passed against incendiaries, and night watchmen were ordered to be appointed in every town and city, between sunset and sunrise.

1302.—The first recorded instance of any steps being taken towards enforcing any of the measures of protection herein referred to occurred this year; and the following account of the same is still preserved in the records of the city as follows: Thomas Bat came before John le Blund, mayor of London, and the aldermen, on the Friday next before the Feast of St. Hilary (13th January), in the thirtieth year of the reign of King Edward, son of King Henry, and bound himself, and all his rents, lands, and tenements, to keep the city of London indemnified from peril of fire, and other losses which might arise from his houses covered with *thatch*, in the parish of St. Laurence, Caandelwyk Strete; and he agreed that he would have the said houses covered with tiles about the Feast of Pentecost then next ensuing; and in case he should not do the same, he granted that the mayor, sheriffs, and bailiffs of London should cause the said houses to be roofed with tiles out of the issues of his rents aforesaid.—"Memorials of London."

1351.—In many of the cities and large towns on the continent it had long been the custom to place a watchman on the top of a large building or tower, to look out for fires, notice of which was conveyed by blowing a horn, firing a gun, or ringing a bell. In Germany a police ordinance which had previously existed was renewed this year; and it required that two watchmen should be posted in each steeple to look out for fires. The mode of indicating the direction of the fire is by holding out a flag towards it in the day, and a lanthorn at night. The practice is still continued.

1371.—The first police regulations regarding fires were made in Paris. Each householder was to put a hogshead of water at his door under a penalty of 10 sous.

1400.—In Leipsic, at this date, the town piper resided in apartments in the steeple, and took part in the fire-watch.

1429.—An Act of Henry VI declared that "If any threaten, by "casting bills, to burn a house, *if money be not laid in a certain place*, "and do after burn the house, such burning shall be adjudged high "treason."

1472.—Reign of Edward IV, a night bellman was employed in Exeter to alarm the inhabitants in case of fire.

1556.—Reign of Mary, bellmen were first appointed in London. They were to ring their bells at night, and call out, "Take care of "your fire and candle; be charitable to the poor; and pray for the "dead."

1545.—By the 37th of Henry VIII, cap. 6, was inflicted the

" pains of death " on all found guilty of certain crimes, amongst which were the secret burning of frames of timber prepared and made by the owners thereof ready to be set up and edified for houses; burning of wains and carts loaden with coals or other goods; burning of heaps of wood, cut, felled, and prepared for making coals; cutting off the ears of the king's subjects, and divers other kinds of offences against property or the person.

1583.—Reign of Elizabeth, Fleetwood, the recorder of London, in a famous speech regarding the power of the sovereign to prevent the growth and extension of the city, said: " In London houses are " to be pulled down with engines, hooks and ladders, provided for " that purpose, and this is by the common laws of the realm. And " this is for avoiding of the rage of fire. . . . By the law no man " may build or make a reredorse for the fire of charcoals in any " house. . . . Tallow chaundlers may not melt their tallow in their " own dwelling houses. . . . Flaxwives for fear of fire. . . . are " inhibited."—*Stow.*

1605.—James I issued a proclamation similar to those issued by Elizabeth against new buildings in the city, or within one mile thereof; and he also commanded " all persons henceforwards to " build their forefronts and windows either of brick or stone, as " well for decency as by reason all great and well-grown woods " were much spent and wasted; so as timber for shipping waxed " scarce."—*Stow.* This proclamation is said to have had little effect.

1607.—Proclamation was again made for the same purpose; and some were censured in the Star Chamber for building contrary to the tenor of the proclamation.

1614.—By a further proclamation all commissioners were required to proceed with strictness against all offenders in this sort. From this time, says Stow, began the new reformation of building. So rare appears to have been a good building at that period, that this old chronicler deems it necessary to record the first few good houses that were built in London. The first house of note thus built was a house in the Strand belonging to Colonel Cecil; after that a house near Drapers' Hall; next to that a goldsmith's house in Cheapside, over against Saddlers' Hall, and a leather seller's house in St. Paul's Churchyard, near the north gate, who was compelled thereunto, after he had set up his house, being all of timber. [Book I, p. 7.]

1615.—Fire engines were in use in Germany at this date.

1633.—Fire engines were introduced into London this year or earlier. At a fire which occurred at London Bridge there were three in use, but they speedily got disabled.

1637.—Charles I, through the lords of the council, drew the

attention of the lord mayor to the valuable services rendered by fire engines, and to their scarcity in the city; also recommending that more "frequent provision bee made of them."

1638.—In a memorial of Sir William Beecher "of such business "as were treated of in this month by the (Privy) Council and "remained yet imperfect," was a letter to the lord mayor for more frequent provision of engines to shoot water for quenching fires. The lords intimated that they would take order for *like provision in the parishes out of the city liberties.*

In a petition to Charles I presented this year by William Ryley and Edward Mabb, praying for leave to establish a scheme of fire insurance, it was stated to be part of that scheme to "keep a continual "watch in all parts of the citty and suburbs all night, that if any fire "should break forth it may presently be espied." And engines were to be kept in every ward "to be ready at hand for quenching of the "same, and the watch brought speedily to the fire." "Reserves of "water shall be made in convenient places for sudden use."

1643.—There was printed in one sheet the following: "*Season-*"*able advice for preventing the mischief of fire that may come by* "*negligence, treason, or otherwise:* Ordered to be printed by the lord "mayor of London; and it is thought very necessary to hang in every "man's house, especially in these dangerous times. Invented by "William Gosling, engineer, how many several ways, houses, "towns, and cities have been set on fire." Next follows a list of causes of fires, which were the same then as now; winding up with "Some by warm sea-coal, cinders put in baskets, or wooden things as "did burn London Bridge: and some have been burnt without fire "or candle, as by wet hay, corn, straw, or by mill-wheels, or such "like; all which hath been by carelessness: and some have been fired "of purpose, by villainy or treason." Next follows orders to be observed that fire may not happen, and orders that if fire should happen, either by wild-fire or otherwise, to prevent the miseries thereof. Printed for H. B., at the Castle in Cornhill.—"Harleian "Miscellany," vol. v.

1650.—I have already spoken of the value of the early fire engines in regard to fire protection. These were manuals; but we appear to have had a narrow escape of having a steam fire engine at this date. Lord Macaulay is my authority, as follows:—

"The Marquis of Worcester had recently observed the expansive power of moisture rarefied by heat. After many experiments he had succeeded in constructing a rude *steam engine,* which he called a fire water-work, and which he pronounced to be an admirable and most forcible instrument of propulsion. *But the Marquis was suspected to be a madman, and known to be a Papist. His invention therefore found no favourable reception.*"—"History of England," vol. i, chap. 3 (see 1829).

1660.—In the case of Manby *v.* Scott, before the Court of King's Bench this year, the principle referred to by Recorder Fleetwood in 1583 is directly affirmed. The judges laid it down that the law of necessity dispenses with things which otherwise are not lawful to be done; "as to throw down any neighbour's house for preventing "the spread of fire," &c.

1666.—*Great fire of London.* In view of preventing the further spread of this fire, the lord mayor ordered the destruction of buildings at certain points by means of gunpowder. The practice has been resorted to from time to time since. Most recently at the great fire at Boston, United States, 1872. It was afterwards held that the fire offices were liable for houses insured with them and so destroyed under proper legal authority.

1667.—The incident of the preceding year led to the passing of important measures in respect to fire protection in the metropolis, viz. (1) An Act of the Imperial Parliament, 19 Car. II, cap. 3, regarding the precautions to be taken in rebuilding the city. (2) A proclamation of the king as to measures of protection at the palace of Whitehall (afterwards destroyed by fire). (3) An Act of the common council as to the appliances for extinguishment of fires in the city, and laying down minute regulations regarding the same. These measures will be found in detail in the article Fire Protection in the "Insurance Encyclopædia."

1677.—Maitland, in his "History of Edinburgh," says, under this date: "Many disasters by fire having been occasioned in "Edinburgh by wooden buildings covered with thatch; for pre-"venting the like thereafter, it was by the town council enacted "that no person presume to build a house of wood, or cover a new "building with thatch; but in time coming all houses to be built "with stones and covered with slates or tiles, under the penalty of "500 marks, and the house to be demolished!"

1681.—The corporation of London having undertaken the business of fire insurances this year, it proposed to procure fire engines "far more useful to the public than any that hath yet been "invented," as also a more powerful fire brigade than had existed, in view of protecting the property it insured from conflagration.

1683.—The Friendly Fire Office founded this year, announced in No. 18 of its regulations:—"Watermen and other labourers to "be imploy'd at the charge of the undertakers, to assist at the "quenching of fires." This was the beginning of the system of the fire insurance offices undertaking the charge of providing at their own cost appliances for fire extinguishment, which is clearly a duty for the municipal government.

1690.—After the great fire at Marlborough this year, a petition was presented to the House of Commons, and is recorded in its

journals, to the effect that leave might be given to bring in a Bill that all the owners of the land whereon the burnt houses stand may be compelled at the rebuilding thereof to cover them with slate or tile, "and make an allowance to their tenants for so doing," and that all other persons when they repair thatched houses, may in like manner re-cover them with slate or tile. We do not find that any such Act was passed.

1697.—An ordinance of the mayor was addressed to the aldermen of the several wards, requiring them to prevent the throwing of squibs, serpents, and other fireworks in and about the streets of the city.

1698.—As a means towards fire protection, the Scottish parliament enacted that no future building erected in the city of Edinburgh should exceed five stories in height.

1700.—About the close of the seventeenth century there was laid before parliament by Mr. Alexander Cutting, a scheme for the protection of property by means of a rate levied upon all houses, which included a fire brigade, a salvage corps, and a scheme of compensation for property destroyed, all under one head. It proposed to do away with the system of fire insurances then recently introduced. The real aim was a scheme of municipal fire insurance under a new phase.

1704.—The scheme of fire insurance set on foot at the Lombard House, Duke Street, Westminster, this year, undertook for the first time the insurance of household goods and trading stock, and made the following announcement:

"The said corporation have provided a competent number of watermen, with coats and silver badges of the figures upon this paper; carmen, with carts, and porters, who give security for their fidelity, and are always to attend at fires, to help to remove insured goods to any place desired; and have also warehouses at convenient distances from all parts, to which those that have no other convenience may send them, and have them again when the danger is over, without paying anything."

This was really a species of salvage corps—the first actually established.

1707.—There was passed 6th Anne, cap. 58 (some editions of the Statute cap. 31), an Act for the better preventing the mischiefs that may happen by fire. Its preamble sets forth:—

"Whereas many fires have lately broken out in several places in and about the cities of London and Westminster, and other parishes and places comprised within the weekly bills of mortality, and many houses have frequently been burnt and consumed before such fires could be extinguished, to the impoverishing and utter ruin of many of Her Majesty's subjects, the rage and violence whereof might have been in part prevented if a sufficient quantity of water had been provided in the pipes lying in the streets, and if party walls of brick had been built between house

and house, from the foundation to the top of the roof, and less timber in the front of houses; For the preventing therefore the like mischiefs in the future, be it enacted:"

1. From 25th March, 1708, the churchwardens of each parish within the bills of mortality to fix on the mains and pipes of any water work, stop-blocks of wood, or fire-cocks, &c. A mark was to be fixed on the front of a house over against the place where the fire-cock lies.

Every parish was to "have and keep in good order and repair, "in some known and public place within each parish, a large "engine, and also a hand engine, to throw up water for the extin- "guishing of fires, and also shall provide, keep, and maintain one "leather pipe and socket of the same size as the plug or fire-cock, "to the intent the socket may be put into the pipe to convey "the water clean and without loss or help of bucket into the "engine." A penalty is imposed upon the churchwardens in case of default.

A gratuity of 10*s.* was to be paid to the turncocks "whose water "shall be found on, or shall first come into the main or pipe where "the first plug shall be opened at any fire." And the "first engine "keeper which brings in a parish engine to help to extinguish any "fire, if in good order and complete, with a socket, hose, and leather "pipe," to be paid 30*s.* The keeper of the second parish engine 20*s.*, and the third 10*s.*

2. Contains a reference to the services of the watermen of the insurance offices (*i.e.* firemen), and a provision that they should be free from impressment.

3. Servants who through negligence fire any dwelling house, out-house, &c., to forfeit 100*l.*, or be sent to the workhouse for 18 months.

4. All houses erected after 1st May, 1708, within the bills of mortality, to have party walls of brick or stone "of two bricks "thick at least in the cellar and ground stories, and 13 inches "upwards to the roof, and to extend 18 inches through the roof." And that no "mundillion or cornish" of timber or wood under the eaves should thereafter be suffered in any new houses. The front and rear walls of all new houses to be built of brick or stone, to be carried $2\frac{1}{2}$ feet high above the garret floor, and coped with stone or brick. Any houses built contrary to these regulations, the owner and head builder or workman to forfeit 50*l.*

5. On the breaking out of any fire, the constables and beadles of the parishes to immediately repair, with their staves and other badges of their authority, and be aiding and assisting, "as well in "the extinguishing the said fires and causing people to work at "the engines, as also in preventing goods being stolen," &c.

6. No action to be prosecuted against any person in whose house or chamber any fire shall *accidently* begin.

1711.—At this date the London theatres were provided with fire engines in case of fire arising during the performance.

1722.—The 9th Geo. I, cap. 22, threw the damages sustained by owners from (*inter alia*) the "setting fire to any house, barn, or "out-house, hovel, cock, mow, or stack of corn, hay, or wood, "which shall be committed or done by any offender or offenders "against the Act," upon the Hundred wherein such offence was committed, upon notice being given within two days after the occurrence of the offence.

1763.—By 4th Geo. III, cap. 14, it is enacted (sec. 10): "And, "for the better preventing mischiefs that may happen by fire, and "to deter and hinder ill-minded persons from wilfully setting their "house or houses, or other buildings, on fire, with a view to gaining "themselves the insurance money, whereby the lives and fortunes "of many families are lost," that the offices might expend the money insured in rebuilding or reinstating the premises "as far as "the same will go." This could be done on request of persons interested; or on suspicion of fraud. This power has since been incorporated into the conditions of fire insurance policies, and has frequently been of value to companies in dealing with suspicious claims.

1774.—Was enacted 14th Geo. III, cap. 78, an Act for the further and better regulation of buildings and party walls, and for the more effectually preventing mischiefs by fire within the cities of London and Westminster, and the liberties thereof, and other the parishes, precincts, and places within the weekly bills of mortality; the parishes of St. Mary-le-Bone, Paddington, St. Pancras, and St. Luke at Chelsea in the county of Middlesex; and for indemnifying under certain conditions builders and other persons against the penalties to which they are or may be liable for erecting buildings within the limits aforesaid contrary to law.

This Act divided all buildings into seven rates or classes, and proceeded to define thickness of the external and the party walls for each class, with other details, such as what recesses and what openings may be in party walls; and how ends of beams may be laid into them; as also for what purposes they might be cut into; and regulations as to chimneys in same. Regulations as to party-walls not extended to the Inns of Court. Rules laid down as to hearths and ovens, &c. No bow windows to extend beyond the line of street. No stack of warehouses to be "above thirty-five squares, "including internal and external walls." Stone doorcases and iron doors to all communications through party-walls of this class. No stable to contain more than twenty-five squares. Same provisions

as before as to turpentine. Every building not erected pursuant to the requirements of this Act to be deemed a nuisance, and to be taken down by order of the Court. The Court of Aldermen to appoint surveyors "skilled in the art of buildings" to fill the office of district surveyors in view of enforcing the provisions of this Act. Outside the city the Justices in Quarter Sessions to make the appointment (sec. 62). This appointment of building surveyors was a new and important feature.

This is usually regarded as the first Metropolitan Building Act. It remained in force seventy years; and upon it the present Act is based.

1803.—The Statute 43 Geo. III, cap. 58, after reciting that certain heinous offences, committed "with intent, by burning, to destroy or "injure the buildings and other property of His Majesty's subjects, "or to prejudice persons who had become insurers of or upon the "same," had been of late frequently committed, and that no adequate means had been hitherto provided for the prevention and punishment of such offences, enacts, that if any person or persons shall wilfully, maliciously, and unlawfully set fire to any house, barn, granary, hop-oast, malt-house, stable, coach-house, out-house, mill, warehouse, or shop, whether such house, &c., shall then be in the possession of the person or persons so setting fire to the same, or in the possession of any other person or persons, or of any body corporate, with intent thereby to injure or defraud His Majesty or any of His Majesty's subjects, or any body corporate, the person or persons so offending, their counsellors, aiders, and abettors, knowing of and privy to such offence, should be and were thereby declared to be felons, and should suffer death, as in cases of felony, without benefit of clergy.

1810.—Under the penal code of China at this date, according to the authority of Sir George Thomas Staunton, Bart., F.R.S., the punishment of a person who accidentally set fire to his house was forty blows; but if the fire spread to the gate of an imperial palace, then death. Wilfully setting fire to one's own house, a hundred blows; to any other house, private or public, death. But further, if a fire takes place in a city, the local municipal officers are called to an account for it, and in view of the authority delegated to them, they are given to understand such things as conflagrations are not to be tolerated. If ten buildings are burned, the highest official in the city is fined nine months' pay; if more than thirty are destroyed, a year's salary is forfeited; and if as many as three hundred are consumed, he is degraded one degree in his rank. It is grimly said that "this regulation induces a wonderful degree "of carefulness on the part of the officials."

1829.—The important event of this year in regard to fire protec-

tion was the manufacture of the *first steam fire engine.* This was manufactured in London, and although an event early in the following year (the fire at the Argyle Rooms) showed its value and efficiency, it was a long time before the invention was made further available in practice. (See 1650.)

1830.—Under the Lighting and Watching Act of this year (11 Geo. IV, cap. 27) powers were given to provincial towns to take legal measures for *fire protection.*

1833.—On the 1st January this year the London fire engine establishment came into existence. The records of its thirty-three years' working is given under another head in this paper. The number of fires in London in each of the intermediate years from this date downward is also shown.

1838.—There was enacted 1 and 2 Vict., cap. 75, an Act to amend so much of the Act of the 25 Geo. III, for the further and better regulation of buildings and party walls, and for the more effectually preventing mischiefs by fire within the cities of London and Westminster, as relates to manufactories of pitch, tar, and turpentine. The amendment is this, that under the Act of 1785 the buildings used must not be within 75 feet of any other building, it was made within 75 feet of a building in any other occupation.

1843.—The borough of Liverpool obtained parliamentary powers to regulate its buildings in view of fire protection.

1846.—There was enacted 9 and 10 Vict., cap. 25, an Act for preventing malicious injuries to persons and property by fire, or by explosive or destructive substances. It deals first with blowing down buildings by explosive substances maliciously, which it makes a felony, and then proceeds:—

"VII. And be it enacted, That whoever shall unlawfully and maliciously by any overt act attempt to set fire to any building, vessel, or mine, or to any stack or steer, or to any vegetable produce of such kind, and with such intent that if the offence were complete the offender would be guilty of felony and liable to be transported beyond the seas for his natural life, shall, although such building, vessel, mine, stack, steer, or vegetable produce be not actually set on fire, be guilty of felony, etc." (See 1861.)

1847.—Under the Towns Police Clauses Act of this year, 10 and 11 Vict., cap. 89, sec. 30, where that Act may apply, any person wilfully setting fire to a chimney is liable to a penalty not exceeding 5*l.*, and this does not exempt him from indictment for felony.

1852.—There was enacted 15 and 16 Vict., cap. 84, an Act to make better provision respecting the supply of water to the metropolis, under section 15 of which is contained provision for a constant supply of water by every metropolitan company. This arrangement was not carried out, and hence the Amending Act of 1871.

1854.—About this date Mr. James Braidwood read before the Institution of Civil Engineers a paper on the Means of rendering large Supplies of Water available in Cases of Fire, and on the Application of Manual Power to the Working of Fire Engines. An abstract of this paper and the discussion upon it were afterwards published.

1855.—The new Metropolitan Building Act was passed. It superseded the Act of 1774.

1860.—Was passed 23 and 24 Vict., cap. 139, an Act to amend the law concerning the making, keeping, and carriage of gunpowder and compositions of an explosive nature, and concerning the manufacture, sale, and use of fireworks.

1861.—The great fire in Tooley Street, London Bridge, this year, led to the requirement by the fire offices of protective measures regarding the size and construction of warehouses and wharves, and the storage and classification of goods therein.

In the autumn of this year, Mr. Easton, the eminent hydraulic engineer, proposed to the chief commissioner of works the construction of a reservoir on Primrose Hill, N.W., to contain 1,000,000 gallons, with main pipes to lead down from it to Buckingham Palace, to the Royal Mews, and Wellington Barracks, to the Houses of Parliament, and to the Government offices in and near Whitehall. He stated that the water companies would gladly bear the charge of keeping the reservoir always supplied with water, provided this supply were exclusively appropriated to the extinction of fires—for under the then existing arrangements the water companies not only supplied water gratuitously for fire extinguishment, but had their arrangements for domestic supply sometimes greatly interfered with.

He afterwards developed his ideas into a plan embracing the whole metropolis, at an estimated cost of 3,000,000*l.*, that is 40 square miles at 72,000*l.* per mile, with 50,000*l.* a-year working expenses for staff and repairs. There would be reservoirs on Primrose and Norwood Hills, with mains permeating all the principal streets of the metropolis; valves or hydrants to any number might be connected with these mains; and as the water would always be at high pressure, hose screwed on to these valves would at all times obtain a jet powerful enough to go over the highest ordinary buildings. No fire engines would be needed, or only a few for special use. The mains would be entirely distinct from those which furnish the house or domestic supply of water; so that there would unfortunately be a double system of breaking up the roads and streets to lay and repair water pipes. Mr. Easton proposed that the police should be taught to manage the hydrants, insomuch that wherever a fire might break out, the *matériel* and

the *personnel* for its extinction would be close at hand. It was suggested that the work might be done by some public body, which could borrow the 3,000,000*l.* at 4 per cent. An instalment of 192,000*l.* per annum would pay off principal and interest in twenty-five years, and then there would only be the annual working expenses to provide for.

1862.—A select committee of the House of Commons was appointed "to inquire into the existing state of legislation, and of "any existing arrangements for the protection of life and property "against fire in the metropolis." The results of the labours of that committee have already been published in a blue book, and are therefore available to all who desire to consult them.

1865.—This year marks an important epoch in the history of fire protection, for there was enacted the 28 and 29 Vict., cap. 90, *an Act for the establishment of a fire brigade within the metropolis*, which has this simple preamble, "Whereas it is expedient to make "further provision for the protection of life and property from fire "within the metropolis." This meant in the first place a transfer of the London fire engine establishment to the Metropolitan Board of Works; and in the next place its extension to the growing wants of the metropolis. The Act contains thirty-five clauses.

It had been estimated that the cost of the London fire establishment had been 2*d.* per 100*l.* insured in the metropolitan district annually. The present contributions of the insurance offices are made a uniform charge on the sums insured in the metropolitan district of 35*l.* per million, or a fraction less than $8\frac{1}{2}d.$ for each 1,000*l.* insured.

It was estimated that to put the brigade, including fire escapes and other appliances, into thorough efficiency, so as to afford real protection to the metropolitan district, the expenditure would sooner or later have to be increased to 100,000*l.* per annum. The Metropolitan Board we believe determined the limit of its expenditure to be 50,000*l.* at starting. Towards this it was to receive say 10,000*l.* per annum from the Government in consideration of its protection of the Government or national buildings; the contributions of the offices, it was estimated, would yield another 12,000*l.* per annum, leaving 28,000*l.* to be raised from the rates, which would be about $\frac{1}{2}d.$ in the pound on the rateable value of 13,000,000*l.* included in the metropolitan area. But the metropolitan parishes were relieved of all charges for maintenance of fire engines, estimated at from 5,000*l.* to 10,000*l.*, and were soon to be relieved of contributions towards fire escapes.

Again, the insurance offices handed over to the Metropolitan Board, as a gift to start upon, the entire freehold and leasehold property, consisting of stations; also the stock of fire engines, manual,

steam, and floating; and all the appliances incident to the establishment. The estimated value of these at time of transfer was, stations 12,571*l.*; plant 11,449*l.* 14*s.* 5*d.*; total 20,020*l.* 14*s.* 5*d.*; against which, however, must be set off value of annuities and pensions allowed to disabled members of brigade, widows, &c., valued actuarially at 5,822*l.* 6*s.* 9*d.*; leaving balance 18,198*l.* 7*s.* 8*d.*

Captain Shaw, in his statistics of the London fire engine establishment, made up to the close of the present year, furnished the following table:—

Average Cost of Extinguishing Fires, &c.

Year.	Number of Fires.	Yearly Expenditure.			Average Cost of Each Fire.		
		£	*s.*	*d.*	£	*s.*	*d.*
1833	458	7,988	7	7½	17	8	10
'34	482	9,277	8	6¾	19	4	11
'35	471	10,410	3	10¼	22	2	–
'36	564	11,765	12	2¼	20	17	2
'37	501	14,252	10	9¼	28	9	–
'38	568	12,186	14	4½	21	9	1
'39	584	11,925	8	8¾	20	8	5
1840	681	13,606	4	11¾	19	19	7
'41	696	12,498	12	8½	17	19	2
'42	769	12,646	4	11½	16	8	11
'43	749	12,518	9	10¼	16	14	3
'44	762	13,019	6	2¾	17	1	9
'45	707	12,804	2	6	18	2	3
'46	834	14,031	7	7	16	16	6
'47	836	18,119	1	9½	21	13	6
'48	805	14,228	7	4	17	13	6
'49	838	13,954	3	1	16	13	–
1850	868	13,801	11	1½	15	18	–
'51	928	15,976	4	5	17	4	4
'52	923	16,540	15	10	17	18	5
'53	900	14,913	5	6	16	11	5
'54	953	15,931	–	5½	16	14	4
'55	982	21,286	10	–	21	13	6
'56	957	17,777	12	8	18	11	6
'57	1,115	18,370	7	4	16	9	6
'58	1,114	18,326	17	–	16	9	–
'59	1,089	17,615	6	6	16	3	6
1860	1,056	25,108	1	9	23	15	6
'61	1,183	23,157	13	8	19	11	6
'62	1,303	22,964	16	10	17	12	6
'63	1,404	23,416	17	–	16	13	7
'64	1,487	24,120	9	11	16	4	5
'65	1,502	26,005	4	7	17	6	3
Total	29,069	530,545	1	8½	18	5	–

1866.—From the 1st January this year the protection of London

against fire passed under the control of the Metropolitan Board of Works, under the circumstances already stated.

Mr. C. F. T. Young, C.E., this year published his work: "Fires, "Fire Engines," &c., wherein he institutes the following comparison:—

London occupies 120 square miles, and has a population of 3,000,000. It has nineteen engine stations, with in the aggregate ten steam engines and thirty-three hand engines—total forty-three; number of men employed 130. Therefore London has one station to every 6 square miles, one engine to every 3 square miles, one (and a fraction) men to the square mile; and one man to 20,000 inhabitants.

New York occupies 23 square miles, has a population of 1,000,000, thirty-five fire stations, forty fire engines—thirty-five steam, five hand—and 1,478 men. Consequently New York has one and a-half engine stations to each square mile; one and three-quarter engines to the square mile; sixty-four men to the square mile, and one man to every 676 of the inhabitants.

Paris occupies 110 square miles, has a population of 1,700,000, has one hundred and thirty fire engine stations and 1,270 men. Therefore Paris has one and one-sixth engine stations to each square mile; nearly one and two-third engines to the square mile; has over eleven firemen to the square mile, or one man to every 1,338 of the population.

In the same work the author remarks upon the tendency of fires in London not only to become more numerous, but of greater extent, and therefore involving far greater losses upon the insurance offices; while the means of controlling them had not increased in the like proportion. "One great reason for this may be the tendency to "construct large buildings, which are not sufficiently subdivided "to render it easy to attack the fire as it were in detail; and in "spite of the Building Act this course seems to be persisted "in, especially in the case of large buildings called Manchester "warehouses. Mr. Vulliamy, architect to the Metropolitan Board "of Works, and who it is said has the means of collecting accu-"rate information upon the subject, states that in London the "'total loss,' or fires in which everything is totally destroyed, "amounts to rather over 14 per cent. of all the fires during the "year."

There was enacted 29 and 30 Vict., cap. 69, an Act for the amendment of the law with respect to the carriage and deposit of dangerous goods.

This year there was founded that important association the *London Salvage Corps*. It is supported by contributions from the fire offices transacting business in London; and that it has been of

essential service in regard to its peculiar functions may be gathered from the following returns of its first ten years' operations:—

Year.	Number of Fires attended by Metropolitan Fire Brigade.	Attendance of London Salvage Corps.	Of which Services were Rendered at
1866	1,338	530	294
'67	1,397	996	327
'68	1,668	1,374	525
'69	1,572	1,420	692
1870	1,946	1,660	803
'71	1,842	1,659	746
'72	1,494	1,384	486
'73	1,548	1,343	564
'74	1,573	1,328	405
'75	1,529	1,221	486
'76	1,632	1,404	446

1867.—Another select committee of the House of Commons was appointed "to inquire into the existing legislative provision for the "protection of life and property against fires in the United King-"dom, and as to the best means to be adopted for ascertaining the "causes and preventing the frequency of fires." The evidence taken by this committee was of a very important character, and will be found set forth in detail in the report of the committee.

One of the subjects considered by the committee was "the cost "of fires," that is, the cost of attending them by the brigades. This varies very much in different countries, perhaps in consequence of the different system pursued. Captain Shaw produced these figures to the committee:—

	Average Cost of each Fire. £		Average Cost of each Fire. £
Liverpool	12	Troy (United States)	63
London	over 18	Buffalo	85
Dublin	20	Baltimore	90
Montreal	over 32	San Francisco	118
Brooklyn	„ 35	St. Louis	125
Philadelphia	„ 48	Boston	157
Sydney	52	New Orleans	172

In order to test these results it would be necessary to have a return of the actual average destruction of property at each fire.

1872.—Mr. John M. McCandlish, F.R.S.E., manager of the Scottish National Insurance Company, read before the Actuarial Society of Edinburgh this year, an Address on Fire Insurance. He shows with admirable logic how the losses arising from insufficient means of fire protection fall on the public sooner or later:—

"It may seem superfluous to dwell on a point so unquestionable; and yet the contrary view is a very common one, and leads to unfortunate consequences. If losses by fires are in reality borne by the insurance offices, then they have the greatest possible interest in keeping down the number and magnitude of fires, and ought to bear the expense of the requisite machinery. *But if all losses really fall upon the insured, in other words, upon the public, then the preventing and extinguishing of fires is directly a matter of public interest, and ought to be done at the public expense.* The force of this truth, however, has not always been perceived by the offices themselves, and is even now recognised by a very small portion of the community. . . . .

"In recent sessions of parliament Bills have been introduced on the recommendation of a select committee of the House of Commons to establish a judicial inquiry into the cause of every fire. These Bills have not been opposed by Government, but very considerable difficulty is found in adjusting a satisfactory machinery for making such inquiries. . . . . The encouragement given to such a Bill is an acknowledgment of the principle that it is the public, and not merely the insurance offices, that have an interest to prevent fires; *and yet so inveterate is the opposite view, that in all probability no measure of this kind will be speedily agreed to, unless on the condition that the cost of the inquiries to be instituted into the origin of the fire shall be wholly or largely borne by the insurance offices.*

"These expenses, and those incurred in extinguishing fires, must in the end fall upon the public, in the same manner as all losses by fire necessarily do; and the only question for consideration is whether the insurance offices ought to be charged with them in the first instance, and left to recover them from the public in the form of an addition to such rates of premium as would otherwise be necessary. The offices might well complain of such an arrangement. The burden, if laid on them, ought to be borne in the several cities and towns throughout the country in some proportion to the business which each office derives from each locality; but this on any general scale is practically impossible. The system, too, is open to the same objection which was held fatal to the fire insurance duties, now happily abolished—that it increases the cost, and to that extent discourages the practice of insurances: *and indeed it is conceivable that the more perfect the system worked in the direction of keeping down fires, the less inclined would many persons be to insure.* But these are objections mainly from the point of view of the fire companies. On behalf of the public, it may be pleaded that at the best it is a clumsy method of taxing the community—when more direct and more equitable methods are available. It throws the cost entirely on the prudent section of the public which insures, while it promotes the security, and encourages the negligence of the imprudent, who do not insure at all, or insure inadequately. *Fire engines managed by local authorities, but supported wholly or in any considerable degree by insurance offices are sure to be kept in less efficient condition, and at greater cost, than when the public are the direct paymasters, and interested therefore in securing good value for money.* . . .

"There can be no question that the arrangement which is most sound in theory, and most for the public interest in practice, is that the owners of property, individually and collectively, should charge themselves with the duty and the cost of preventing and extinguishing fires. Losses by fire being thus reduced as much as possible in number and magnitude, may then be left, in the first instance, to be met by insurance companies, and ultimately to be distributed by them amongst the persons insured, in the form of rates of premium, which will inevitably in the long run bear a fair proportion to the losses."

This is one of the points which I especially desire to enforce.

1873.—There was again introduced to parliament, a Bill to make provision for investigation into the causes and circumstances of fire. The measure was brought in by Mr. Peter M'Lagan, who had been chairman of the select parliamentary committee in 1867, and who in that position, as also from other means of observation and inquiry, has come to the conclusion, as many others have done, that there should be an official inquiry into the circumstances attending every fire, irrespective of the actual sacrifice of life. I shall offer some further observations upon this subject at the close of the present paper.

1874.—The gas and water committee of the common council of London, appointed to report upon the water supply to the city in case of fire, presented an able and exhaustive report, in which they state that they were naturally desirous of obtaining every information upon so important and vital a question, and they were enabled by the courtesy of the Metropolitan Board of Works to obtain much valuable evidence upon the subject from Captain Shaw, the chief officer of the Metropolitan Fire Brigade. They had also the assistance of Mr. Muir, the engineer of the New River Company.

The report next refers to the present condition of the water supply of the city, and it appears that the city receives its water supply almost entirely from the New River Company. The engineer says that the company have now provision for a continuous daily delivery of more than 36,000,000 gallons of water, with a present daily demand of about 25,000,000 gallons; and they also have a right to pump to any extent from the River Thames below Blackfriars for any service of a "non-domestic" kind; also that exclusive of the ponds at Hampstead and Highgate, which hold together about 30,000,000 gallons, the company have high service reservoirs containing more than 20,000,000 gallons, and a further store at lower levels of more than 100,000,000 gallons. The company's engine power is now sufficient to raise water into their upper reservoirs at the daily rate of 50,000,000 gallons; and all the contents of these various reservoirs are available for use in the city,

in which they have 78 miles of pipes, 25 miles of which are constantly under pressure.

With regard to the water supply required for extinction of fire in London, Captain Shaw reported that in the whole of the metropolis it had not been much in excess of 8,000,000 gallons, and he distinctly stated to the committee that there had been no difficulty from any insufficiency of water supply for extinction of fire in the city, whatever occasional delay there might have been in obtaining the required service. It also appeared that the pressure of the present water supply of the city had sufficed hitherto, and might be greatly increased. The committee, however, express their opinion *that the system of street plugs, which makes the attendance of a turncock necessary before water can be obtained, is not suitable to meet sudden emergencies, which must necessarily occur in every case of fire;* and that, to secure a quick obtainment of water, it is absolutely essential, for the protection of public property, that a proper number of constantly charged hydrants be fixed which will represent an immediate supply of water.

Taking into consideration the important interests involved in the question, the committee were of opinion that every possible means should be provided for the rapid extinction of fires by an immediate supply of water; and that, although it had been shown that the supply and storage of water is ample, the present means of procuring it at fires were not equal to the emergency of the case, and that this difficulty might be met by the use of hydrants constantly supplied with water; and having in view the immense amount of property within the city, and the extensive fires which from time to time occur within its area, they thought that for the protection of the citizens of London it was highly desirable that the corporation should take the lead in establishing a system which there could be no doubt would be a most useful adjunct in preventing the extension of fires. If the court agreed with this, the committee asked that it should be referred back to them to consider the means of carrying it out.

The report was referred back to the committee, who subsequently (1875) reported that it was desirable to establish hydrants, to be kept constantly charged, at every 66 yards in the city streets, in order to maintain an efficient water supply for the rapid extinction of fire. Hydrants are now being generally erected throughout the city. It has been stated that the cost of 900 hydrants would not exceed 10,000*l.*

1874.—In the "North American Review" there was an article written by Mr. Bugbee, wherein he gave statistics:—

1. *Fire Brigades.*

Place.	Population.*	Area in Square Miles.	Number of Fires.	Number of Steam Engines.	Number of Firemen.	Expenses of Department.	Expense per Capita.†
						£	*s.* *d.*
London	3,340,000	122	1,494	28‡	396	68,617	– 5
New York	980,000	22	1,380	38	629	199,453	4 2
Philadelphia .	709,000	129	655	24	253	80,546	2 4
St. Louis	360,000	—	197	11	110	33,263	1 11
Chicago	380,000	23¾	489	16	201	76,400	4 2
Baltimore	281,000	15	172	10	151	32,127	2 4
Boston.....	260,000	15½	389	21	459	80,000	8 5
Cincinnati	221,000	22	213	19	154	56,387	5 4

2. *Fire Losses.*

Place.	Number of Dwelling Houses.	Total Loss for Past Five Years.	Loss per Capita.†
		£	£ *s.* *d.*
New York	64,044	3,165,372	3 7 6
Philadelphia	112,366	2,294,188	3 4 10
St. Louis	39,675	824,826	2 13 6
Chicago	44,620	1,813,608§	6 1 7
Baltimore	40,350	354,474	1 6 8
Boston	29,623	654,423§	2 12 10
Cincinnati	24,550	715,353	3 6 5
San Francisco.....	25,905	559,077	3 15 6

* In the American cities the census of 1870 is taken, and the natural increase for two years added.

† The loss per capita (as also the number of houses) is based on the census of 1870, as it would be a fair average for the years covered in the statement of losses.

‡ Including three floating engines.

§ Exclusive of the great fire.

1875.—In the (London) "Times" of 30th October this year there appeared a letter signed "A Fire Office Manager," in which was contained some most excellent suggestions for increasing the means of instantaneous communication through the metropolis. He proposed that there should be established guard-houses at suitable points throughout the metropolis, at which should be stationed a policeman, the fire escape conductor, the omnibus time keeper, &c. There should be from each guard-house means of telegraphic communication with the fire brigades and police stations of the metropolis. On the occurrence of a fire, the call would be delivered to the nearest guard-house, and hence would be known at all required quarters forthwith. The suggestion is a most excellent one, and should be forthwith adopted.

The letter also contains the following statement of the comparative forces in the great commercial capitals of Europe for the arrest of fire :—

	Population.	Engines.	Strength of Brigade.
London	3,254,260	95	396
Paris	1,851,000	203	1,500
St. Petersburg	667,963	37	1,149
Berlin	826,341	50	1,090
Hamburg	240,271	53	789
Lyons	323,417	48	475

1876.—Captain Shaw, in his new work, "Fire Protection," puts the case as between fire insurance and fire protection very well:—

"A safe principle would be for the inhabitants of a town to consider first, what amount of insurance would cover their losses if they had no protection at all; secondly, what amount of protection would afford them almost complete security from loss; and then, working from these two points, to decide for themselves how much they would be inclined to spend *directly on defensive measures*, and how much indirectly on the payment of losses. There is no greater or more common delusion than to suppose that the intervention of an insurance company has anything to do with this matter. Every town has certain risks, and when losses occur, they are paid for by the town itself, either directly, or through an insurance company drawing its premiums from the town. The business of insurance companies is simply to receive premiums and pay losses, and of course they assess the former so as to cover the latter, and leave a margin for profit. Many persons insure, and it is most proper and praiseworthy that they should do so, as they may not have capital to repair such losses as they are liable to; but this does not in any way affect the principle here laid down, *that each community has in some way or other to pay for its own losses*, and should therefore take the necessary precautions for its own interests, which brings us back to the point from which we started—namely, the advantage of employing skilled professional persons to advise as to the several apportionments of direct and indirect payments, and to work and be responsible for all matters connected with the system of protection."

Captain Shaw also published this year a pamphlet: "Fires in "Theatres," wherein many practical suggestions are offered regarding fire prevention in these hitherto very combustible risks. His suggestions also extend to the protection of surrounding property.

In order to give this section of my subject the completeness desired, I had hoped to be able to make an estimate of the cost of the fire departments of the different countries of Europe; but it is impossible to do so: there is no data. The cost in *France* has been estimated at 1,000,000*l.*, which is probably too much. For *Germany* I can find no data. In the United States the estimate is 5,000,000*l.*; this probably is very near the mark. Who can say what it is in the *United Kingdom?*

II.—*Amount of Property actually Burned.*

On this important head—the most important of all that I shall on this occasion submit to your notice—we have, I regret to say,

literally no reliable statistics. The losses paid by the fire offices are for reasons stated in a later part of this paper, no measure for the actual annual loss of property. A great deal of the property burned is uninsured; other portions are insured "subject to average;" and in fact the question of insurance rather complicates the problem than otherwise.

What seems strange beyond all power of expression is, that the constantly recurring devastations by fire have never yet sufficiently interested the Governments of civilised countries to have caused the adoption of a simple statistical record, if nothing more, of the aggregate annual number of fires, their causes as nearly as can be ascertained, and the amount of property destroyed thereby!

At the present moment *Russia* is the only country in Europe, and I believe I may say in the world (I am not certain about *China*), wherein such statistics as I have spoken of are really collected. The able men who govern that great country were not slow to discover the lessons to be learned from such returns.

In view of obtaining, if possible, some idea of the annual destruction of property by fire, I commenced the compilation of a table of the great fires of the world. This table I do not give here; first, because it would occupy as much space as the whole of this already lengthy paper, and second, because it was impossible, in the great majority of cases, to obtain any correct estimate of the actual loss of property occasioned. Then again it became apparent in the investigation that it is not, after all, the great fires which occasion the greater loss. The aggregate of the smaller fires, those which happen day by day so continuously that they cease to make any impression upon us—it is these which really constitute the data by which the aggregate loss from fire is to be measured or estimated. The great fires, properly so called, involving for instance the loss of 50,000*l.* and upwards, probably do not account for more than *one-fifth* of the losses of any average year.

I shall have occasion at the close of this paper to make some suggestions regarding the collection of statistics of fires, and of the lessons to be learned from them; I will not, therefore, dwell further upon the subject here, but proceed to present such feeble statistics as are available on this branch of the subject.

1666.—The great fire of London, which happened this year, first led to any notice of the statistics of fires. The total number of houses burned was 13,200; and the aggregate loss was estimated at 10,716,000*l.*

1680.—An estimate by Nicholas Barbon and others, founders of the first joint stock fire institution in London (and probably in the world!) established this year contained the following passage:—"The calculation of the houses burned by these several fires [in

"London since 1666] is 750 houses or thereabouts, which (at least "200*l.* a house, one with another) amount to 150,000*l.*"

1806.—The fires in London for the year ending 29th September were 552, viz., 366 alarms, attended with little damage, 153 chimneys on fire, and 31 serious fires. Hone, in his "Table Book," says:—"The offices calculate on an alarm of fire every day, and about "eight serious fires in every quarter of the year."

1829.—Mr. Braidwood, in his "Fire Engines, &c.," published in Edinburgh in 1830, gave the following statistics regarding the fires, &c., in that city. The number of houses, shops, and assessable places within the bounds of the police was 29,000. The fires, &c., in the following years ending 30th September, were:—

Year.	Totals.	Entire Loss.	Considerable Loss.	Trifling Damage.	Foul Chimneys.	False Alarms.
1825.....	48	11	12	14	9	2
'26.....	80	7	18	31	17	7
'27.....	113	1	12	55	39	6
'28.....	94	1	18	43	28	4
'29.....	194	1	9	56	118	10

He says: "In examining the above table it will be observed "that serious fires decrease as the number of alarms increase. The "cause of so many false alarms in 1828-9 was that a considerable "number of fires having been observed to arise from foul chimneys, "the firemen were sent to every one from which the slightest "danger was apprehended."

In Paris the number of houses at this date was supposed to be 26,000. The fires over an average of twenty years had been 540 per annum, or rather more than two fires per hundred houses; but on account of the efficiency of the corps of Sapeurs Pompiers, it was believed that only one house out of every five hundred which caught fire was actually burned. (Braidwood, p. 132.)

1841.—An inquiry was instituted by Mr. William Baddeley, C.E. —well known in connection with his efforts in saving life from fire—into the proportion of burned properties in London, including the buildings and their contents, with the following results:—

In 1841.	Insured.	Not Insured.	Unknown.	Total.	Proportion Insured.
					Per cnt.
Buildings	914	197	10	1,121	81·53
Contents	609	404	12	1,015	60·0
	1,523	601	22	2,136	71·30

Thus 81½ per cent. of the number of buildings were insured, and

60 per cent. of the contents; and of either one or the other, out of the total cases by fire reported, about $71\frac{1}{3}$ per cent.; leaving $28\frac{2}{3}$ wholly uninsured. The *proportion of the value insured* was not reached by this inquiry. (See 1838 and 1850.)

1842.—The number of fires about this date in Liverpool had become so large, and their character so serious, that the rates of premium went up from 8*s.* to 30*s.*, 40*s.*, and in some cases to 45*s.* per cent. *It was calculated that the losses by fire from the commencement of the century in this borough had amounted to about* $3\frac{1}{4}$ *millions sterling.*

1844.—In Knight's "London" occurs the following passage:—"The statistics of London fires are by no means devoid of interest, "and the time may come when they will form an index to the "social advancement of the people; for in proportion as houses are "built more and more fireproof, and habits of carefulness become "more and more diffused, the number of destructive fires will "assuredly lessen."

1856.—Mr. Braidwood, in his paper on "Fires," read before the Society of Arts this year, said that fires in London had doubled since the commencement of the London Fire Brigade in 1833; "and "not only are the 'calls' doubled, but the fires at which it is "necessary to put engines to work have increased in a much "greater ratio, being nearly three times the number they were "twenty-three years ago." He added:—

"Many reasons have been given for the increase in the number as well as in the serious damage caused by fires of late years. It appears to me that the many improved modes of heating, and the general use of gas, render spontaneous ignition much more common than formerly, and when premises do take fire, cause the fire to proceed much more rapidly. In 1833, of the number of premises which took fire, barely 21 per cent. (20·9) used gas; while in 1855 gas was used in upwards of 67 per cent. of the buildings which took fire."

1867.—Mr. Fletcher, the then secretary of the Sun Fire, stated in his evidence before the select parliamentary committee this year, that in the years 1864 and 1865, the losses of seventeen English offices were compared. They were in number 14,458, and amounted to upwards of 1,250,000*l.* Out of these fires, there were no less than 4,623 the cause of which could not be ascertained.

The question of the "loss to the nation"—the political economy aspect of the case—was considered by the committee; and the following is the substance of the evidence of Mr. S. J. Fletcher (Sun Fire) thereon:—

"1506. In looking to this question, do you think it is a serious loss to the nation that so much property is destroyed by fire?—Very considerable loss is incurred by the nation by intentional fires. In other similar cases an inquiry takes place, in cases of accident by railway or to shipping; but it is curious that

there is no inquiry on the part of the public by any public machinery with regard to the question of fires, by which so large an amount of property is annually destroyed. . . .

"1509. Have you ever noticed any distinction in the number of fires when trade is good, and when trade is bad?—That occurs continually. When there is a depression in any particular trade then the fires in that particular trade commence; that is one of the points which satisfies me that many fires are intentional: if the cotton trade is depressed, mills and cotton warehouses are burned down, and so with the hat or shoe trade, if there is depression, fires immediately follow.

"1510. That is a sort of fire-barometer?—Decidedly; it is a well-known fact.

"1511. Does that extend to farm produce?—I think it does; very many fires that are attributed to incendiarism, in the country, I am satisfied are occasioned by the farmers themselves.

"1512. The working of the law in question is peculiarly noticeable in Liverpool, is it not?—In Liverpool, Manchester, and every other place: and it is convincing to me that a much greater number of fires than we are apt to think are the result of intention."

The committee passed on to what may be designated a very natural question:—

"1579. Perhaps you are aware that there has been produced some impression in the country that insurance offices, so far from being averse to fires, do not at all object to a certain amount of fires?—(Mr. Fletcher.) If such an opinion as that is prevailing, it is entirely in contradiction to the convictions of my office. They are making every effort which can be made to prevent the increase of fires.

"1580. Do they not fancy that a certain number of fires, if not attended with too great a loss of property, rather give a spur to fresh policies?—It is a most mistaken notion."

Another point which engaged the attention of the committee was "whether fires were actually on the increase," that is, relatively to the number of the population, or to the number of buildings. Several witnesses were examined on this point. Mr. Swanton, superintendent of the London Salvage Corps, said the proportion was increasing, and handed in the following returns for London in support of his position.

Table Showing the Increase of Fires upon the Population and Number of Houses for the Years 1852 *and* 1862.

1852. *Population*, 2,362,263; fires, 923. There was one fire for every 2,559 persons, according to the number of persons shown by the census of 1851.

„ *Houses*, 327,391; fires, 923. There was one fire for every 354 houses, according to the number of houses shown by the census of 1851.

1862. *Population*, 2,803,989; fires, 1,303. There was one fire for every 2,152 persons, according to the census of 1861, being an increase of nearly *one-fifth*.

„ *Houses*, 379,222; fires, 1,303. There was one fire for every 291 houses, according to the number of houses at the census of 1861, being an increase of over *one-fourth!*

Mr. Swinton Boult, the then manager of the Liverpool, London, and Globe Insurance Company, handed in to the same committee, a

Table Showing the Fires have Increased in an Undue Ratio to the Increase of Population and Houses.

In 1845	there was 1 fire	to every	2,990	of the population, and to every	395 houses
„ '50	„	„	2,673	„	347 „
„ '55	„	„	2,585	„	333 „
„ '60	„	„	2,613	„	335 „
„ '61	„	„	2,370	„	303 „
„ '62	„	„	2,188	„	280 „
„ '63	„	„	2,064	„	265 „
„ '64	„	„	1,980	„	255 „
„ '65	„	„	1,900	„	250 „

He also handed in another table showing the increase in the number of fires recorded as of "suspicious, doubtful, or unaccounted "for" origin, which we have already given under "Causes of Fires" at this date.

Finally Captain Shaw was examined on the same subject, and he handed in returns of a more complete order, from which we compile the following table:—

Twenty-Five Years' Fires in London.

Year.	Fires.	Population.	Houses.	People to Each Fire.	Houses to Each Fire.
1840	681	1,907,036	258,425	2,800	379·47
'41	696	1,948,417	262,744	2,800	377·50
'42	769	1,989,719	267,062	2,588	347·28
'43	749	2,031,181	271,381	2,725	362·32
'44	762	2,072,563	275,700	2,720	361·81
'45	707	2,113,945	280,029	2,990	395·08
'46	834	2,155,326	284,338	2,584	340·93
'47	836	2,196,708	288,657	2,628	345·28
'48	805	2,238,090	292,976	2,780	363·94
'49	838	2,279,472	297,295	2,720	354·76
1850	868	2,320,854	301,614	2,673	347·48
'51	928	2,362,236	305,933	2,546	329·67
'52	923	2,406,411	311,281	2,607	337·24
'53	900	2,450,586	316,629	2,723	351·81
'54	953	2,494,762	321,978	2,618	337·85
'55	982	2,538,937	327,327	2,585	333·32
'56	957	2,583,112	332,676	2,699	347·62
'57	1,110	2,627,288	338,025	2,356	304·52
'58	1,114	2,671,463	343,374	2,398	308·23
'59	1,089	2,715,638	348,723	2,494	320·22
1860	1,056	2,759,814	354,072	2,613	335·29
'61	1,183	2,803,989	359,421	2,370	303·82
'62	1,303	2,851,145	366,045	2,188	280·92
'63	1,404	2,898,301	372,669	2,064	265·42
'64	1,487	2,945,457	379,293	1,980	255·08

1868.—The returns of the Manchester police for the year ending 29th September gave the number of fires which were attended within that city, viz. 301, which was an increase of 16 upon the previous year. The following details as to the proportions of buildings and stock insured and uninsured are valuable. Buildings insured 202, amount 251,922*l.*; not insured 95, amount 105,291*l.* Stock, number insured 127, amount 483,531*l.*; not insured 165, amount 103,721*l.*; total at rise 944,465*l.* The loss of the year was found to be but 2*l.* 3*s.* per cent. upon the entire property at risk within the city. The total cost of the brigade during the year was 3,523*l.* 17*s.* 1*d.* Here we have two-thirds of the buildings insured; but much less than half the stocks so protected. The larger number of stocks at risk arises from the circumstance of several persons occupying one building frequently.

1872.—The annual report of Captain Ingram, chief of the fire brigade for Dublin, stated the alarms in 1872 to have been 188; of which 5 were false, 111 were only chimney fires, 72 were more extensive. Two of the fires resulted in total destruction of buildings, 12 in serious damage, and 55 in slight injuries. Five persons were rescued by the fire escapes. The expense of the brigade amounted to 1,446*l.* 6*s.* 6*d.*

1872.—Mr. John M. McCandlish, manager of the Scottish National Fire and Life Company, in his address before the Actuarial Society of Edinburgh this year (already quoted), spoke as follows:—

"The principle which lies at the root of fire insurance is one sufficiently obvious when stated, but not unfrequently lost sight of. Every time that property suffers damage by fire—unless in those rare cases where it is intrinsically worthless or noxious—*there is an absolute loss to some person or other.* This is often forgotten. The owner of the property is recouped by means of his insurance, and therefore does not lose; and the insurance company may be said to gain by its losses. It is by fires, as it were, that it makes its living; and if at the end of its year its balance is on the right side, the losses during the year are regarded as having been inevitable: they have been expected and provided for; and if the company does not feel them, still less do the public feel them on its behalf. *And yet the reality of the loss is beyond question.* The property destroyed has cost money, skill, labour, which now all go for nothing. To replace it (if it can be replaced) will cost money, skill, and labour, which might otherwise have been employed in increasing the quantity of property in the world, instead of merely leaving it as it was before. *The loss, in fact, is not felt, simply because it is distributed; and fire insurance is the machinery for its distribution.*

"In some countries the damage done by fire to buildings, if not to other property, is made good at the expense of the State or the municipality, and provided for, like other general expenses, by a tax. This, in fact, is simply a mutual insurance managed by the public authorities, and is open to many objections. We prefer in this country the plan of distribution by means of joint-stock companies under private management. But this does not alter the incidence of the loss. I observe frequently an advertisement by one great office that it has paid

9 millions sterling on account of losses by fire. Its own capital is not stated; but it is unlikely to have exceeded 1 million sterling, and it still no doubt possesses all the capital it ever did, and possibly much more. It cannot therefore have paid the 9 millions out of its own funds. It has simply been the medium by which they have been transferred from the pockets of one set of people to those of another."

1875.—Herr Lugwig Jung, director of the Munich Fire Department, and of the Bavarian Firemen's Association, published this year a work on "Protection of Property against Fire," wherein he gives (*inter alia*) the following important statistics: During the twenty-five years from 1843 to 1868, no less than four thousand insured buildings were destroyed by fire in Bavaria alone, exclusive of the Palatinate. During the fifty years from 1821 to 1871 the Bavarian company for the insurance of buildings against fire paid 61 million gulden for losses, and the whole of this large sum was supplied by the premiums levied on house owners. During the years from 1870 to 1872, inclusive, 34 million thalers were paid by the insurance companies in Prussia, and 11 million gulden are paid annually, upon the average, by the sixty-six companies of the German Empire which insure upon real property.

1875.—The losses in the cotton trade alone in the Manchester district this year were estimated at 1,100,000*l.* The premiums received on these risks were estimated at 800,000*l.*; but from these the expenses had to be deducted, in order to determine the amount available to meet losses.

1876.—The following are the details of the fires in Manchester for the year ending 29th September, 1876: Fires attended by the brigade 328. Estimated value of property (buildings and stock) at risk 2,771,385*l.* Of this amount 118,178*l.*, or 4·2 per cent. was destroyed. Compared with the preceding year there was an increase of 36 fires, of 668,934*l.* in amount at risk, and of 55,480*l.* in the amount destroyed. The estimated value of the property saved (*i.e.* not destroyed) was 2,653,207*l.*, or 95·7 per cent. The annual average for ten years of the property jeopardized and not destroyed by fires, was 1,630,998*l.*, or 96·2 per cent. of the amount at risk. Nine lives were lost, and 15 fires were attended beyond the limits of the city during the year.

Supplemental—Fires in London.

Almost the only uniformly collected statistics which are available on the subject of fires, are those of the *London Fire Engine Establishment* (of which I give some account under head "Protection "against Fire"), kept by Mr. Braidwood from the year 1833 down to the year of his death (1862); and by his successor from that date down to the close of 1865, when the protection of London against fire ceased to be a matter of private enterprise, and assumed more of

the form of a municipal responsibility. These statistics extend over a period of thirty-three years, and embrace such a number of events as to entitle the results which they indicate at least to reasonable confidence. I guard myself in this way, because a supplemental table which I have compiled from the returns of later years present results differing in some respects from those immediately before us. In 1870 Captain Shaw published the detailed "Records," from which the following facts are drawn :—

The total number of calls received during the thirty-three years was 35,145. Of these 2,769 were false alarms; 3,307 proved to be only chimney alarms; and 29,069 were for fires, of which 9,635 resulted in serious damage, and 19,434 in slight damage. Here are the details for each year of the period, compiled from Captain Shaw's Table No. 107 :—

Calls.

Year.	Total Number of Calls.	Alarms.			Fires.		
		False.	Chimney.	Total.	Total Number of Fires.	Seriously Damaged.	Slightly Damaged.
1833.....	592	59	75	134	458	166	292
'34.....	651	57	112	169	482	144	338
'35.....	643	66	106	172	471	156	315
'36.....	756	66	126	192	564	167	397
'37.....	717	82	134	216	501	144	357
'38.....	755	79	108	187	568	185	383
'39.....	755	70	101	171	584	182	402
1840.....	863	84	98	182	681	230	451
'41.....	855	67	92	159	696	258	438
'42.....	912	61	82	143	769	248	521
'43.....	911	79	83	162	749	260	489
'44.....	926	70	94	164	762	260	502
'45.....	875	81	87	168	707	276	431
'46.....	1,022	119	69	188	834	258	576
'47.....	990	88	66	154	836	300	536
'48.....	1,011	120	86	206	805	296	509
'49.....	1,003	76	89	165	838	256	582
1850.....	1,038	91	79	170	868	247	621
'51.....	1,159	115	116	231	928	276	652
'52.....	1,105	93	89	182	923	263	660
'53.....	1,062	72	90	162	900	261	639
'54.....	1,123	79	91	170	953	339	614
'55.....	1,154	91	81	172	982	370	612
'56.....	1,104	75	72	147	957	393	564
'57.....	1,302	96	91	187	1,115	471	644
'58.....	1,320	94	112	206	1,114	417	697
'59.....	1,282	91	102	193	1,089	421	668
1860.....	1,241	69	116	185	1,056	422	634
'61.....	1,409	89	137	226	1,183	385	798
'62.....	1,543	109	131	240	1,303	321	982
'63.....	1,624	81	139	220	1,404	349	1,055
'64.....	1,715	101	127	228	1,487	402	1,085
'65.....	1,727	99	126	225	1,502	512	990
Total	35,145	2,769	3,307	6,076	29,069	9,635	19,434

A continuation of this table will be given later. It is desirable to leave the numbers undisturbed, as they form the base of other tables.

The following is a monthly summary for the thirty-three years 1833-65 of fires, false alarms, and chimney alarms. [Compiled from Captain Shaw's Table No. 106.]

Monthly Summary.

Month.	Alarms.			Fires.			Total Calls.
	False.	Chimney.	Total.	Seriously Damaged.	Slightly Damaged.	Total.	
January	194	339	533	857	1,694	2,551	3,084
February....	199	325	524	748	1,570	2,318	2,842
March	208	374	582	836	1,604	2,440	3,022
April	207	334	541	752	1,483	2,235	2,776
May.....	189	242	431	716	1,651	2,367	2,798
June	234	245	479	748	1,581	2,329	2,808
July.....	301	188	489	770	1,719	2,489	2,978
August	277	187	464	847	1,708	2,555	3,019
September .	244	195	439	810	1,523	2,333	2,772
October	252	250	502	738	1,487	2,225	2,727
November .	242	267	509	883	1,580	2,463	2,972
December ..	222	361	583	930	1,834	2,764	3,347
Total	2,769	3,307	6,076	9,635	19,434	29,069	35,145

It is here seen that while *July* is the month which produces the greatest number of "false alarms," *December* is the month which has the greatest total of calls, as also of serious fires. *June*, which has been regarded as a most fatal month for London fires, only stands No. 8 in regard to total calls, and No. 10 in regard to "seriously damaged." A further reference to this subject will be found.

We next have a weekly summary of all fires, false alarms, and chimney alarms, from 1833 to 1865, being Captain Shaw's Table No. 72.

Weekly Summary.

Week.	False Alarms.	Chimney Alarms.	Fires.	Total Calls.	Week.	False Alarms.	Chimney Alarms.	Fires.	Total Calls.
1st, endg. Jan. 7	40	77	563	680	28th, endg. July 15	61	49	593	703
2nd, „ „ 14	38	69	584	691	29th, „ „ 29	70	40	553	663
3rd, „ „ 21	42	78	583	703	30th, „ „ 29	72	38	533	643
4th, „ „ 28	57	77	576	710	31st, „ Aug. 5	55	36	610	701
5th, „ Feb. 4	46	80	595	721	32nd, „ „ 12	62	42	571	675
6th, „ „ 11	44	84	540	668	33rd, „ „ 19	75	53	587	715
7th, „ „ 18	54	78	575	707	34th, „ „ 26	56	42	548	646
8th, „ „ 25	51	91	568	710	35th, „ Sept. 2	65	37	544	646
9th, „ Mar. 4	48	69	591	708	36th, „ „ 9	65	44	551	660
10th, „ „ 11	56	98	558	712	37th, „ „ 16	53	61	549	663
11th, „ „ 18	54	87	557	698	38th, „ „ 23	62	42	546	650
12th, „ „ 25	42	93	559	694	39th, „ „ 30	51	35	541	627
13th, „ Apl. 1	33	68	525	626	40th, „ Oct. 7	63	59	528	650
14th, „ „ 8	40	74	481	595	41st, „ „ 14	66	48	492	606
15th, „ „ 15	42	70	517	629	42nd, „ „ 21	52	62	480	594
16th, „ „ 22	56	85	560	701	43rd, „ „ 28	50	56	530	636
17th, „ „ 29	61	82	528	671	44th, „ Nov. 4	48	63	523	634
18th, „ May 6	41	57	501	699	45th, „ „ 11	63	63	632	758
19th, „ „ 13	37	64	542	643	46th, „ „ 18	49	57	591	697
20th, „ „ 20	45	69	521	635	47th, „ „ 25	57	73	543	673
21st, „ „ 27	43	44	543	630	48th, „ Dec. 2	50	67	514	631
22nd, „ June 3	48	48	592	688	49th, „ „ 9	43	65	548	656
23rd, „ „ 10	56	48	525	629	50th, „ „ 16	47	86	600	733
24th, „ „ 17	40	59	542	641	51st, „ „ 23	56	81	649	786
25th, „ „ 21	52	61	547	660	52nd, „ „ 31	64	102	819	985
26th, „ July 1	79	54	550	683					
27th, „ „ 8	69	42	571	682	Total	2,769	3,307	29,069	35,145

In this table the year is divided into fifty-two periods of seven days each, except the last week, which has eight days. Making allowance for this additional day, the last week of the year is still the most fatal as regards fires, the preceding week next, then the second week in November, and next to that the first week in August. It is not easy to follow the operation of the causes which produce this last-named result.

But in view of carrying the observations still further we have a daily and hourly summary for the thirty-three years 1833-65 inclusive, giving fires only, and omitting false alarms and chimney alarms. [This is Table No. 38 of Captain Shaw's summary.]

Daily and Hourly Summary.

Hour.	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Total.
A.M. 1....	334	193	243	283	242	286	233	1,814
„ 2....	291	188	237	221	225	213	190	1,565
„ 3....	224	159	201	171	194	203	164	1,316
„ 4....	213	120	151	152	174	140	137	1,087
„ 5....	121	82	111	119	108	116	135	792
„ 6....	95	69	88	87	76	89	88	592
„ 7....	92	71	65	63	80	70	99	540
„ 8....	96	65	78	86	82	70	76	553
„ 9....	81	76	81	76	87	79	77	557
„ 10....	90	81	90	97	70	81	84	593
„ 11....	101	107	95	101	106	90	98	698
„ 12....	104	106	118	102	122	114	104	770
P.M. 1....	108	109	145	135	124	113	105	839
„ 2....	100	115	124	113	139	104	115	810
„ 3....	102	115	123	111	116	81	121	769
„ 4....	102	132	144	127	112	99	129	845
„ 5....	128	148	149	138	145	126	145	979
„ 6....	162	187	188	197	188	156	147	1,225
„ 7....	240	266	260	240	260	247	221	1,734
„ 8....	296	317	277	289	292	279	294	2,044
„ 9....	308	386	331	354	348	327	344	2,398
„ 10....	294	382	370	384	363	400	356	2,549
„ 11....	247	348	340	318	306	299	246	2,204
„ 12....	221	279	243	262	261	231	299	1,796
Total....	4,150	4,101	4,252	4,226	4,220	4,013	4,107	29,069

Here we have *Tuesday* as the greatest *day* for fires, whilst "unlucky Friday" has the least. Regarding the hours, 10 o'clock P.M. is the worst; 7 o'clock A.M. the best.

The *hours* which have most fires are 8, 9, 10, and 11, P.M.—10 occupying the first place; 12 o'clock P.M. is heavy; while 1 o'clock A.M. is still more so. All the heavy figures run from 6 P.M. to 4 A.M. It has been said of fires as of births, that about two-third of them occur in the night.

Trades of Occupiers.

Trades.	Seriously Damaged.	Slightly Damaged.	Total.
Ale and porter merchants	1	—	1
Almshouses	1	—	1
Apothecaries and dealers in drugs, no chemical works carried on	60	63	123
Arsenal	1	—	1
Artists' colourmen	—	1	1
Asphaltum works	3	4	7
Auctioneers	1	1	2
Bacon dryers	10	14	24
Bagnios	28	90	118
Bakers	183	350	533
„ biscuit	10	8	18
Barge and boat builders	15	23	38
Barges	5	5	10
Basket makers	22	16	38
Baths and wash-houses	7	7	14
Beershop keepers	116	178	294
Berlin wool warehouses	—	2	2
Bird dealers	1	—	1
Billiard rooms	1	3	4
„ table makers	—	1	1
Blacking makers	3	7	10
Bleachers	2	—	2
Booksellers, binders, and stationers	186	256	442
Bottle merchants	2	7	9
Boot and shoe makers	35	51	86
Brace and belt „	—	2	2
Brewers	20	26	46
Brickmakers and kilns	3	5	8
Bridges	1	—	1
Brokers and dealers in old clothes	153	175	328
Brushmakers and bristle merchants	14	12	26
Builders	146	104	250
Butchers	23	68	91
„ pork	9	21	30
Button makers	—	1	1
Cabinet „	316	237	553
Calenderers	1	1	2
Camphor makers	1	2	3
Cane, dealers in	21	9	30
Cap makers	1	3	4
„ peak makers	—	1	1
Carpenters and workers in wood, not cabinet makers	557	607	1,164
Card and pasteboard makers	12	7	19
Carriers	4	7	11
Carvers and gilders	4	4	8
Cement makers	4	—	4
Cemeteries	1	—	1
Chandlers	184	246	430
Charcoal and coke, dealers in	15	27	42
Charcoal manufacturers	—	1	1
Cheesemongers	55	74	129
Chemists, including all places in which are laboratories for chemical purposes	55	69	124
China and glass, dealers in	3	18	21
Chocolate and chicory manufacturers	3	4	7
China and glass manufacturers	3	3	6
Churches	32	66	98
Clothiers	6	10	16
Cloth workers	1	—	1
Coal merchants	17	28	45
Coachmakers	45	45	90
Cochineal dryers	—	1	1
Cocoanut-fibre manufacturers	11	5	16
Coffee roasters	10	31	41
Coffee house keepers	96	218	314
Colour makers	23	27	50
Comb „	1	—	1
Confectioners and pastrycooks	62	96	157
Coopers	49	55	104
Corn chandlers	97	37	134
„ merchants	1	1	2
Cork burners	6	8	14
„ cutters	32	16	48
Cotton and wool, workers in	6	4	10
Cotton merchants	4	1	5
Cotton wick manufacturers	2	—	2
Cotton factories	—	1	1
Cowkeepers	—	8	8
Crinoline manufacturers	1	1	2
Curriers and leather dressers	36	32	68
Curiosities, dealers in	—	1	1
Dancing academies	1	—	1
Distillers	34	25	59
„ naphtha	3	2	5
„ turpentine	6	2	8
„ chemists	3	—	3
„ tar	29	13	42
Docks	11	19	30

Trades of Occupiers—Contd.

Trades.	Seriously Damaged.	Slightly Damaged.	Total.
Drapers, woollen, linen, and mercers ..	360	420	780
Drysalters	9	12	21
Druggists, wholesale	14	20	34
Dyers	16	35	51
Eating houses	37	141	178
Egg merchants	—	2	2
Elastic web manufacturers	—	1	1
Emery and black lead manufacturers	3	4	7
Engineers, mechanical....	44	47	91
Engravers	—	7	7
Envelope makers	1	—	1
Fancy box ,,	15	11	26
Farming stock	181	49	230
Feather merchants and dressers	19	17	36
Fellmongers	23	6	29
Felt makers	7	1	8
Firewood merchants	6	9	15
Fire Preventive Company	1	—	1
Firework makers	64	22	86
Fire annihilator manufacturers	1	—	1
Fishing tackle makers....	1	1	2
Fishmongers	2	14	16
Fish curers	4	10	14
Flax dressers and mills .	5	11	16
Flour mills, steam	12	5	17
,, water	1	1	2
Flower, artificial, makers	20	11	31
Floorcloth manufacturers	33	7	40
Founders	29	59	88
French fancy warehouses	26	30	56
,, polishers	3	2	5
Fried fish shops	1	6	7
Furriers, skin dyers, and dressers	37	30	67
Furniture stores	2	—	2
Galvanised iron manufacturers	1	—	1
Gaming houses	2	4	6
Gasworks	22	47	69
Gas fitters	1	—	1
Ginger beer and soda water makers	3	5	8
Glass and lead merchants	1	2	3
Glass and lamp merchants	3	4	7
Glass manufacturers	10	15	25
Glue and size makers....	6	7	13
Gold and silversmiths ..	—	1	1
Granary keepers	11	8	19
Greengrocers and fruiterers	19	49	68
Grocers	219	177	396
Gun manufacturers	1	1	2
Gunpowder, dealers in	1	—	1
Gun makers	1	1	2
,, barrel makers	1	—	1
Gutta percha works	1	2	3
Glass and emery paper makers	4	2	6
Hay and straw salesmen	12	4	16
Haberdashers	17	23	40
Hairdressers	5	12	17
Hairpin makers	—	1	1
Harness ,,	1	—	1
Hardware, dealers in	3	9	12
Hat makers	142	86	228
Hearthrug manufacturers	2	—	2
Hemp and flax merchants	2	—	2
Hemp dressers	12	3	15
Herbalists	1	1	2
Hop merchants	2	6	8
Horse slaughterers	1	—	1
Horsehair merchants	12	15	27
Hospitals	3	5	8
Hotels, including club houses	39	155	194
Hosiers	5	7	12
Ice merchants	1	2	3
Indiarubber manufacturers	16	9	25
Ink makers	5	8	13
,, (printers')..	13	1	14
International exhibition	—	17	17
International bazaar	—	1	1
Iron bedstead makers....	1	2	3
Ironmongers	1	1	2
Italian warehousemen ..	1	2	3
Japanners	48	17	65
Jewellers and watch and clock makers	9	8	17
Jute and hemp manufacturers	4	—	4
Kamptulicon works	2	—	2

Trades of Occupiers—Contd.

Trades.	Seriously Damaged.	Slightly Damaged.	Total.
Lace manufacturers	—	1	1
Lamp makers	2	5	7
„ black makers	17	14	31
Laundresses	43	97	140
Lath renders	1	—	1
Leather, patent, makers	15	8	23
„ embossers	—	1	1
Leather sellers and dressers	4	7	11
Leather bag makers	2	—	2
Lime wharves and merchants	4	3	7
Linen manufacturers	1	—	1
Lodgings	295	2,532	2,827
Looking glass and picture frame makers	17	13	30
Lucifer match makers	94	74	168
Lucifer match box makers	2	2	4
Lunatic asylums	3	5	8
Maltsters	11	10	21
Manure manufacturers	2	5	7
„ dealers in	7	11	18
Markets	1	1	2
Marine stores, dealers in	62	111	173
Mast and block makers	5	6	11
Masons	2	2	4
Mat makers	12	11	23
Mattress makers	11	14	25
Metal perforators	—	2	2
Milliners and dressmakers	64	128	192
Mineral teeth manufacturers	—	1	1
Mills	1	1	2
„ steam	5	3	8
„ wind	2	—	2
Mill makers	1	—	1
Musical instrument makers	48	26	74
Musical string makers	1	—	1
Mustard makers	2	2	4
Music halls	1	1	2
Naphtha manufacturers	3	1	4
Newsvendors	2	4	6
Nuts, dealers in	—	12	12
Nurserymen	4	2	6
Oakum manufacturers	2	2	4
Offices	2	30	32
Oil works	30	11	41
Oil and colourmen	187	235	422
Opticians	2	1	3
Organ builders	1	5	6
Painters, plumbers, and glaziers	36	42	78
Panoramas	—	2	2
Paper stainers	19	22	41
„ hangers	2	1	3
Paper mills, makers, and warehouses	9	3	12
Paper collar makers	1	—	1
Parchment „	2	—	2
Paraffin light company	1	—	1
Pawnbrokers	26	21	47
Perfumers	5	4	9
Perambulator makers	4	3	7
Pewterers	1	1	2
Photographists	12	12	24
Photographists' apparatus manufacturers	1	1	2
Pianoforte makers	13	6	19
Pitch makers	2	—	2
Picture dealers	3	2	5
Pipe makers	4	7	11
Pickle manufacturers	1	2	3
Portmanteau makers	1	2	3
Potteries	10	11	21
Poulterers	3	—	3
Printers	84	139	223
Printers, copperplate and lithographic	17	23	40
Printers, calico	4	2	6
Private	1,189	6,132	7,321
Prisons	4	5	9
Provision merchants	5	11	16
Public buildings, not warehouses	16	50	66
Public places of entertainment, not theatres	11	17	28
Quill merchants	1	1	2
Rag „	61	58	119
Railways	25	59	84
Retail shops and counting houses	13	20	33
Revelenta arabica food merchants	1	—	1
Ribbon dressers	—	1	1
Rice mills, steam	3	—	3
Rope makers	50	25	75
„ wire	—	1	1
Sack makers	14	17	31
Saddle tree makers	1	3	4
Safe makers	1	—	1
Saltpetre refiners	2	1	3
Sale shops and offices	397	790	1,187

Trades of Occupiers—Contd.

Trades.	Seriously Damaged.	Slightly Damaged.	Total.
Sail makers	16	4	20
Salt merchants	—	2	2
Saw mills, steam	80	57	137
Scale board cutters	8	—	8
„ makers	—	2	2
Schools	25	38	63
Scum boilers	1	7	8
Sewing machine makers	—	1	1
Ships	56	88	144
„ steam	18	25	43
Ship builders	25	33	58
„ chandlers	18	11	29
„ breakers	—	1	1
Shirt and collar makers	1	3	4
Shot makers	1	—	1
Silk dressers	1	3	4
„ weavers	23	14	37
Smoked meat, dealers in	—	1	1
Snuff mills	1	—	1
Soot merchants	3	48	51
Spice „	2	2	4
Splint cutters	1	—	1
Stationers, wholesale	3	2	5
Stables	235	312	547
Starch makers	10	2	12
Statuary, dealers in	1	—	1
Stay makers	2	7	9
Steam mills	1	—	1
„ engines	1	—	1
Straw hat and bonnet makers	26	26	52
Sugar refiners	19	17	36
Surgical bandage makers	—	2	2
Tailors	145	199	344
Tallow chandlers, wax chandlers, and soap boilers	77	75	152
Tanners	25	16	41
Tarpaulin makers	14	10	24
Tea merchants	1	1	2
Telegraph company	1	—	1
Theatres	7	43	50
Timber merchants	24	22	46
Tinmen, braziers, and smiths	95	209	304
Tobacco manufacturers	21	22	43
Tobacconists	76	141	217
Tool merchants	—	1	1
Toy warehouses	17	28	45
Trimming, dealers in	1	1	2
„ weavers	2	4	6
Tripe dressers	1	1	2
Tube drawers	1	—	1
Type founders	2	2	4
Umbrella makers	10	3	13
Under repair buildings	126	186	312
Unoccupied	45	137	182
Upholsterers	60	80	140
Varnish makers	26	24	50
Victuallers	410	915	1,325
Vinegar works	3	2	5
Vitriol „	—	1	1
Wadding makers	26	20	46
„ gun, makers	—	1	1
Waggons on the road	3	4	7
Warehouses	43	64	107
Warehouses, Manchester	36	65	101
Waste paper dealers	—	1	1
Waterproof canvas makers	32	12	44
Watch glass makers	1	—	1
Waterworks	3	2	5
Water gilders	1	—	1
Weavers, carpet	4	5	9
Wharfingers	21	41	62
Wheelwrights	4	7	11
Whiting makers	—	3	3
Whip „	1	—	1
Willow bleachers	1	—	1
Window blind makers	2	2	4
Wine coopers	1	—	1
Wine and spirit merchants	42	140	182
Wire workers	1	4	5
Wool staplers and manufacturers	13	6	19
Wool warehouses	1	1	2
Workhouses	11	20	31
Workshops, no hazardous goods or process	22	24	46
Zinc works	1	—	1
Total	9,635	19,434	29,069

Causes of Fires.

This is in many respects one of the most instructive tables of the entire series. It enumerates the causes of 29,069 fires happening in London during the thirty-three years, 1833-65.

Causes.	Total.
Accident	25
Alteration	1
Airing beds	8
„ linen	83
„ stable	1
Ashes falling from furnace	1
Asphalte boiling over	3
Benzoin, drawing off	1
Bleaching basket	1
„ ginger	2
„ hops	1
„ nuts	10
„ pot	1
„ spice	1
„ straw	1
Blue light, making	1
Boiler	7
„ exploding	4
„ funnel	1
„ heat from	44
„ improperly set	1
„ leaking	3
Bonfire	8
Bottle, ether being broken	3
„ electric fluid bursting	1
„ essential oil „	1
„ whisky „	3
„ nitrous acid exploding	1
Boy drawing beer in cellar	1
„ lighting a fire	2
Boys playing with fireworks	1
„ gas	1
„ gunpowder	3
Boys smoking	1
Brazier's fire	1
„ stove	1
Breaking still pipe	1
Breaming boat	4
Broken windows	1
Bude light	1
Burning a basket	1
„ bedding	1
„ a bed	1
„ a cask	1
„ cork	4
„ a hole with hot iron	1
Burning pitch off a cask	2
„ out cistern to pitch it	2
„ out paint pots	1
„ rubbish	10
„ sawdust	1
„ shavings	7
„ soot falling	1
„ straw	1
„ waste paper	5
„ white fire	1
„ wood placed in cellar	1
Bursting of kiln	1
Camphine boiling over	2
„ exploding	3
Candle	3,218
Canvas ceiling	2
Carboy of muriatic acid bursting	3
„ French polish „	1
Carelessness	106
Cask of spirits falling	1
Casting blowing	2
Cats	34
Chafing pan	3
Charcoal fire	2
„ overheating	2
„ pan	6
„ stove	9
„ sweepings	1
Chair falling into fire	3
Chandelier falling	1
Chemicals boiling over	1
„ exploding	7
Chemical process	1
Chicory put away on fire	3
Children playing with fire	471
„ lucifers	95
„ fireworks	2
Child reaching over fire	1
Chimney shaft, heat from	8
Chinese fire	2
Cigar thrown down area	7
Cleaning dress with camphine	1
„ gas cock	1
„ pots	1
Clothes coming in contact with fire	4

Causes.	Total.
Clothes drying	3
,, on stoves	3
Clothes horse falling on fire	3
,, upset by monkey	1
Cooking	16
,, apparatus	8
,, on roof	1
Cooper's devil	1
Copper	13
,, boiling over	7
,, fire	43
,, fire, timber under	2
,, heat from	5
,, heating, without water	2
,, portable	1
,, set on floor	12
Coke fire	7
Cork ashes	1
,, put away on fire	1
Cotton waste	4
Covering pipes with millboards	1
Crinoline	3
Cutting away party wall	1
Curtains	2,822
Defect in refining pan	1
,, wall	1
Dipping sleepers, hot	1
Doubtful	190
Dogs	9
Drawing off from boiler	1
Dress taking fire	1
Drying bags	3
,, cellar	1
,, fibre	1
,, flax	1
,, herbs	3
,, house	2
,, jute	1
,, lace	2
,, millboards	2
,, paper	6
,, room	1
,, salvage	1
,, stove	199
,, umbrellas	1
,, waste	1
,, wood	10
,, room, overheat of	4
,, stove, ,,	5
Dustbin under shed	2
,, falling into fire	1
Easing stopcock	1

Causes.	Total.
Eau de Cologne	1
Emptying powder on fire	1
Escape of hydrogen gas	1
Essence pot leaking	1
Examining rockets	1
Experiment	7
Explosion	44
Fat, boiling of	3
,, over	3
Fat falling in steam consumer	1
,, thrown on fire	1
,, upset	2
Falling of rocket stick	1
Fire adhering to coffee pot	2
,, at Rotherhithe	1
,, basket	1
Fire dropped in letter box	1
,, through flooring	1
,, through hole	1
Fire from locomotive	1
,, street	1
,, grate adjoining	1
,, grate, heat from	6
Fire from grate improperly constructed	1
Fire, heat from	12
,, in next house	1
,, in workshop	3
,, in vault	1
,, left burning	1
Fire made on bricks	3
,, in saucepan	2
,, on floor	3
,, on sheet iron	1
Fire on wharf	1
,, on iron kettle	1
,, pan	1
Fireplace blocked up	7
,, built against shed	1
,, defect in	10
,, set on timber	2
Fireworks	58
,, explosion of	3
Fire in cask	5
Fits	4
Flue	32
,, blocked up	153
,, boiler	1
,, defect in	301
,, descending	3
,, heat from	13
,, hot air	18

Causes.	Total.
Flue, hot plate	2
,, foul	1,946
,, overheat of	18
,, kitchen	1
Flue, copper	87
,, defect in	2
Flue, furnace	14
,, defect in	7
,, heat from	12
,, overheat of	4
Flue adjoining	101
,, blocked up	8
,, copper	1
,, defect in	43
,, furnace, defect in	6
,, foul	2
,, heat from	12
,, furnace, heat from	1
,, hot plate	1
Flue, hot air, overheat of	1
,, forge, ,,	1
Furnace	150
,, overheat of	18
,, set on timber	1
,, shaft	1
Fumigation	81
Friction	39
Fusees igniting	17
,, case of, falling	3
Gas	1,682
Gas burner	5
,, too near ceiling	1
Gas cock, defect in	1
,, cooking apparatus	1
,, company's men at work	2
,, escape of	364
,, explosion of	44
,, from street	5
Gasfitters at work	20
Gas, lighting	74
,, pipe, defect in	4
,, stove	17
,, swing bracket	5
Galley fire	1
Glue boiling	14
Gauge glass bursting	1
Gunpowder	4
Hand grenade	1
Hatter's stove	1
Heat from casting	8
,, kiln	3
,, malt	1
Heat from retorts	1
,, sun	14
Heating by steam	1
,, cement	1
,, coffee	1
,, ether	1
,, gold size	1
Heating solution	8
,, tan	1
Hearth, defect in	26
,, fire on	141
,, improperly set	1
,, laid on timber	21
High tide	1
Hot ashes	259
,, air pipes	10
,, air stove	1
,, coals	2
,, coke	21
,, charcoal	9
,, grease	1
,, metal	3
,, oven	41
,, plate	29
,, rivets falling	1
,, water stove	2
,, water pipes	7
,, gridiron among sawdust	1
Horsehair falling on fire	1
Hurdle falling on cockle	1
,, wharf fire	1
Illumination	4
Incendiarism	133
Insanity	5
Intoxication	155
Ink boiling over	1
Ironing	1
,, stove	62
Iron foundry adjoining	1
,, plate fixed on timber	1
,, hanger put away hot	1
Japan boiling over	3
Kiln	22
,, overheat of	6
,, furnace, overheat of	1
Kitchen range	7
Lamp	51
,, camphine	2
Lamp, naphtha	70
,, upset	4
Lamp, paraffin	11
,, upset	8

Causes.	Total.
Lamp, petroleum	1
„ black, overheating	8
Lightning	12
Lighting fire	7
„ lamp	1
„ oven	2
Lighted paper	25
„ shavings	1
„ sawdust	1
Light in vault at funeral	1
„ thrown in yard	1
Light thrown into ventilating opening	7
Light thrown down area	63
„ under door step	1
„ from omnibus	1
Lime slacking	93
„ by rain	14
„ by high tide	2
Lime unslackened	2
Linseed oil leaking	1
Lucifers	306
„ friction of	1
„ case of, dropping	1
„ jackdaw playing with	1
Making polish	4
„ pomatum	1
„ varnish	2
Mattress placed before fire to dry	1
Meat falling into fire	1
Melting beeswax	3
„ gum	1
„ lead	12
„ pot	2
„ pan bursting	1
„ sulphur	1
„ sealing wax	1
„ varnish	1
Metal gas pipe	1
„ overflowing	1
„ upsetting	2
Men fighting	1
Mould bursting	1
Mistake of exciseman	1
Mixing composition	10
„ colour	2
„ sulphur	1
Muriatic acid, boiling	1
Naphtha	5
„ boiling	3
„ bottle of, breaking	1
„ cask of, exploding	3

Causes.	Total.
Naphtha upsetting	1
Night lights	2
Oil, boiling of	24
„ over	6
Oil cask bursting	1
Oil lamp	1
„ upsetting	1
Oil thrown on dung heap	1
Old age	3
Opening a pipe	1
Oven	13
„ adjoining	3
„ defect in	7
„ falling in	2
„ fire, spark from	1
„ flue	3
„ improperly set	2
„ overheat of	5
Overheat of gas in ventilator	1
Packing	4
Painters at work	1
Pan slipping	1
„ head blown off	1
„ of composition igniting	1
Paper used to fan fire	1
Paraffin oil upset	1
„ drawing off	3
Pasting charts	1
Pitch boiling	9
„ over	41
Pitch, drawing off	1
Pitching a back	1
Pipe stove	181
„ for ventilating gaslight	1
Plumbers	10
„ fire adjoining	3
Poker falling out of fire	2
Phosphorus	7
Proofing, boiling of	1
Railways	1
Rats gnawing matches	1
„ gas pipe	1
Reading in bed	34
Removing	1
Repairs	12
Repairing gas meter	1
„ gas pipe	3
„ organ	1
Retorts bursting	2
„ leaking	1
Refusing to admit firemen	1
Roasting coffee	2

Causes.	Total.
Roasting chestnuts	1
„ machine	1
„ nut gall	2
Rosin, boiling of	6
Rubbish too near furnace	1
Sack falling on fire	1
„ placed near fire	1
Sewing in bed	3
Seeking for leaking gas pipe with candle	1
Shavings near oven	1
„ taking fire	5
Sheet iron under stove	1
Shooting birds	2
Singeing a horse	1
Smoking in bed	2
„ fish	1
„ hams	3
„ rats	1
„ sausages	2
„ tobacco	406
Smoke hole	11
Smothering iron	1
Soldering pot	1
Solution boiling over	1
Soot	12
Spark from chimney	4
„ casting	2
„ engine	1
„ forge	6
„ flue	5
„ furnace	15
Spark from furnace of threshing machine	1
Spark from fire	1,225
„ hot plate flue	2
„ locomotive	7
„ moulding	1
Spirits boiling over	2
Spirit cask leaking	1
„ filling of	1
Spirit falling on fire	1
„ gas stove	1
Spirit lamp	18
„ overflowing	5
Spirits of nitre	1
„ wine	1
Spirit thrown on fire	1
Spontaneous ignition	274
Steam	2
Steam boiler	11
„ exploding	2
Steam boiler, overheat of	20
„ engine	19
„ furnace flue	8
„ gauge bursting	1
„ jacket	1
Steam pipe	1
„ bursting	1
„ overheat of	5
Still	1
„ bursting	10
„ boiling over	2
„ exploding	1
„ overheat of	1
„ head blown off	15
„ heat from	1
„ head, leakage of	9
„ leaking	4
Stove	297
Stove adjoining	7
„ set on timber	1
Stove, cabin	13
„ defect in	6
„ heat from	65
„ improperly set	7
„ overheat of	30
„ on floor	3
„ pipe	57
„ portable	3
Sugar, boiling of	2
„ over	2
Sunlight burner	2
Sulphur	1
Suspicious	5
Tar, boiling of	33
„ copper leaking	4
„ light thrown into	3
„ pot boiling over	21
„ pipe bursting	1
„ taking fire	2
Tarring a water butt	7
Tarpauling falling against stove	1
Tallow boiling over	6
Thawing water pipes	4
Timber under hearth	32
„ funnel	2
Tinman's stove	1
Tiring wheels	5
Trade	1,132
Trying annihilators	1
„ signal lights	1
Turpentine	5
„ boiling over	2

Causes.	Total.
Turpentine, drawing off	5
„ leaking	5
„ upset	5
„ warming	3
Turning off gas	1
Varnish boiling over	31
„ drawing off	3
„ using, by candle-light	1
Valve of cylinder not fitting	1
Waggon driven too near lamp	1
Warming bed	2
„ tap of tank	1
Wax boiling over	4
„ of	2
Wax taper	17
Wax and turpentine boiling over	1
Woman falling into fire	3
Wood left burning in stoke hole	1
Working late	4
Working late on Sunday	1
Workmen	17
„ cooking	1
Workmen's fire	8
„ spark from	1
Workmen trying if camphor would burn	1
Workshop fire	2
Unknown	9,557
Total	29,069

Here is a short abstract of the leading cases deduced from the preceding table:—

	Number.	Per Cent.		Number.	Per Cent.
Candles	3,218	11·07	Sparks of fire	1,299	4·47
Children playing, &c.	463	1·59	Spontaneous ignition	274	0·95
Curtains	2,822	9·71	Stoves	489	1·67
Flues	2,268	7·80	Other causes known	5,639	19·40
Gas	2,225	7·65	Unknown	9,557	32·88
Lucifers	409	1·41			
Smoking tobacco	406	1·40	Total number	29,069	100·00

It will be understood that the above tables present (generally) but abstracts of the results of the complete records. These are sufficient for our present purposes. I assume all who desire further details will gladly consult "Records of the late London Fire "Engine Establishment, by Captain Eyre M. Shaw," 1870, London, Effingham Wilson.

The following is a return of the London fires by way of continuation to the table given under date 1865:—

Year.	Total Number of Calls.	Alarms.			Fires.		
		False.	Chimney.	Total.	Total Number of Fires.	Seriously Damaged.	Slightly Damaged.
1866	1,532	—	—	—	1,338	326	1,012
'67	1,591	111	83	194	1,397	245	1,152
'68	1,858	100	90	190	1,668	235	1,433
'69	1,784	120	92	212	1,572	199	1,373
'70	2,246	133	109	242	1,946	276	1,670
'71	2,046	—	—	204	1,842	207	1,635
'72	1,671	104	73	177	1,494	120	1,374
'73	1,703	83	72	155	1,548	166	1,382
'74	1,750	89	88	177	1,573	154	1,419
'75	1,668	90	49	139	1,529	163	1,366
'76	1,787	91	64	155	1,632	166	1,466

This last table presents several points for remark. While for the preceding thirty-three years, 1833-65, the fires of London had shown a steady progressive increase, governed apparently by the increase of the number of houses, this table shows some remarkable fluctuations. Thus in 1868 the fires show an increase of 267 over those of the preceding year. In 1869 they fall back to something like the normal ratio of increase. But in 1870 there is again a serious jump, the calls of that year being no less than 462 more than those of the preceding year. Since then they have shown considerable signs of decrease: the calls for 1875 being no less than 578, or nearly 25 per cent. below those of 1870. Captain Shaw in his annual report to the Metropolitan Board of Works refers to the fluctuations, but does not explain them. A careful survey of the figures seems to indicate that the "false alarms" and "chimney" calls are less numerous since 1870. Is not this to be traced either to the introduction of the electric telegraph as the means of call, or to the change of the system in paying for calls, since the discovery of the "Anthony frauds" in 1871?

There is another aspect of the case which is really encouraging: for it shows the progressive efficiency of the fire brigade. This is the decreasing percentage of serious as against slight fires, during the period embraced in the last table. Here are the percentages, as presented by Captain Shaw:—

Years.	Percentages.		Total.	Years.	Percentages.		Total.
	Serious.	Slight.			Serious.	Slight.	
1866	25	75	100	1871	11	89	100
'67	18	82	100	'72	8	92	100
'68	14	86	100	'73	11	89	100
'69	13	87	100	'74	10	90	100
'70	14	86	100	'75	11	89	100

1876.—A select parliamentary committee was appointed to inquire into the efficiency, &c., of the Metropolitan Fire Brigade. The labours of that committee are not yet terminated. The following results from a return laid before this committee may be given here, as they differ in some respects from those previously given. For the last ten years the month in which the largest number of fires occurred in London was *July*, and next to it in the return stands *August*, and then *December*. The days on which the largest number of fires happened were *Saturday* and *Wednesday*. The hours at which the largest number of fires broke out were from 7 P.M. to 11 P.M.

It was part of my plan to have given under this head something

like an authentic summary of the amount of property annually burned in the various civilised countries of the world. This I have not succeeded in doing. In the absence of any national statistics there is literally no base for an accurate estimate. The aggregate of the insurance premiums paid to the fire insurance companies of the world—even if this important fact could be completely ascertained, which it cannot [I give a partial estimate at end of Division V]—would afford but an inefficient test, from the fact that only a varying proportion of the combustible property of any country is insured.

III.—*Introduction and Development of the Practice of Fire Insurance.*

While the early Saxon guilds had distinctly recognised the principle of affording specific compensation to such of their members as should suffer from the calamity of fire; and while several attempts had been made to introduce it into general practice—notably that made to Count Anthony Gunther von Oldenburg in 1609, but which that worthy refused to adopt, on the ground that it seemed liked flying in the face of providence; or again, the scheme of William Ryley and Edward Mabb, laid before Charles I in 1635 and 1638, and which obtained that monarch's sanction, and seemed in a fair way to be carried out, when the king's own troubles turned men's minds into another direction; or a still later proposal (1660) of "several persons of quality and eminent citizens of the "city of London" to the corporation of London, in view of inducing the city to undertake the business of insuring houses; the system did not come into practice in Great Britain until the year following the GREAT FIRE OF LONDON of 1666; and in all probability would not have then come into use but for that event.

It is to be noticed that each of the three schemes here so briefly referred to—but the details of which I have set out in my History of Fire Insurance—took the shape of State or municipal insurance, *i.e.*, that the business of insuring houses was to be conducted by the State, or in the last case by the municipality, *as a scheme of finance*, and not for trading profit merely.

Mr. Frederick Hendriks has expressed an opinion that the law of *Cora* (or *Keure*), which was promulgated by Count Thomas of Flanders, as early as 1240, contained a provision for meeting the case of destruction of property by fire, by a community of liability, something after the manner of a mutual insurance compact which should apply to a whole community. In Russia at the present time, and for long past, it has been the practice for the nobles, *i.e.*, the landholder to insure the villages of his (late) serfs, by paying such a sum in case of fire as would rebuild the log hut, and perhaps

contribute to replace its scanty contents. But after a careful investigation, I have been unable to trace the actual practice of fire insurance by way of indemnity in respect of a premium or contribution *pro rata* prior to the great fire of 1666. If there had been any insurances on the houses in London at that date, I do not think the fact could have escaped record. I now proceed chronologically.

1667.—Dr. Barbon (said to be a direct descendant of Praise-God-Barebones of the Cromwellian commonwealth) opened an office in London for the insuring of houses. In the same year the *Fire Casse* in the city of Hamburg was founded. This latter was a system of municipal insurance.

1669.—During this year the attention of the corporation of London was again drawn to the question of fire insurance. Various discussions were entered upon and resolutions taken. Counter propositions and rival schemes were also advanced; and it was not until the 17th June, 1681, that the corporation of London finally resolved upon undertaking the business of fire insurance as a scheme of municipal finance. On the 16th September that year the advertisement announcing the scheme was promulgated, and business was immediately afterwards commenced. But such commencement of business was the signal for war with a body of gentlemen who had in 1680 taken up Barbon's scheme and converted it into a joint stock undertaking. To such an extent was the warfare carried, that the honesty of the corporation in the matter was openly attacked; and finally, on 13th November, 1682—just one year and one month after it had been resolved "to "undertake ye insuring of all houses within the city and libertyes"—the enterprise was abandoned by resolution of the common council, and the contracts already entered into were cancelled on the best terms possible. These contracts had been for terms varying from one to one hundred years.

Those who desire to become acquainted with the details of this remarkable "chapter in the history of the corporation of London," may consult the "Insurance Cyclopædia," article, Fire Insurance, History of, where the facts and official documents are all set forth.

1683.—The corporation of London was no sooner out of the contest, than there enters upon the scene the promoters of the Friendly Society—a scheme of mutual fire insurance. However fierce the warfare had been with the corporation, that with "the "new interlopers" was still more severe and personal; and was finally only adjusted by being referred to the king (Charles II) in council. From this period dates the origin of those mutual contribution fire insurance associations, of which the Hand-in-Hand,

the Westminster, and, in a modified form, the Union, are the sole survivors. The origin of these, and other associations of this period, is set out in detail in the article previously referred to.

1697.—By this date the practice of fire insurance had become very general in London; but the provinces generally, including the larger provincial cities and towns, were still without such means of protection. They had still to rely, on the occasions of great calamities by fire, upon the bounty of the nation in the way of response to "Briefs" issued under authority, but open to the greatest possible abuse. The history of "King's Briefs," in use certainly in the fifteenth century, but probably of much earlier origin, forms a curious chapter in our national history, and it is wonderful that a so fruitful topic almost of romance should have escaped the keen eye of Macaulay. It was from events which occurred during this year that the abuses attending the system became exposed. This led up to a legislative enactment (in 1705), and finally to their abandonment.

1710.—It was by the establishment of the "Company of London "Insurers" (now the Sun Fire) this year, that the advantages of fire insurance became extended to the provincial towns of the kingdom.

1720.—During this year—fruitful in so many projects of insurance, some of them of a very remarkable character, but outside our present consideration—the establishment of the "Friendly Fire" in Edinburgh, gave to Scotland the advantages of fire insurance. The establishment of the "General Insurance from Fire in Ireland" gave the same advantages to that country.

1780.—Of twenty-two fire insurance associations which had been founded in the United Kingdom prior to this date, there were nine remaining, viz.:—Hand-in-Hand (1667); Sun (1710); Union (1714); Westminster (1717); British and Irish (1720); Friendly of Edinburgh (1720); London Assurance Corporation (1721); Royal Exchange (1721); Liverpool (1777). Of these six still exist (1877).

I now proceed to indicate the decennial progress of fire insurance in the United Kingdom, as revealed by the progress or otherwise of its number of fire offices.

1790.—Of the nine fire offices which existed at the commencement of this decennium, and three since founded, making a total of twelve, all were in existence.

1800.—During the decennium now ending there had been founded seven new fire offices; one of which had died out, leaving six, which, added to the twelve existing in 1790, made a total of eighteen then existing fire insurance offices.

1810.—The new fire offices of the decennium were both numerous and important. In London there were founded the Globe (1803); Imperial (1803); Albion Fire and Mutual (1805); County (1807); Eagle Fire and Life (1807); Hope Fire and Life (1807); Atlas Fire and Life (1808). In the provinces the Essex and Suffolk (1802); Kent (1802); Hants, Sussex, and Dorset (1803); Finchingfield (1804); Liverpool, No. 2 (1804); Birmingham (1805); West of England (1807); Sheffield (1808). While in *Scotland* there were founded the Caledonian (1805); the Hercules (1809) and the North British (1809). In *Ireland* the Hibernian (1808). Total new offices, nineteen. Of the eighteen existing at the commencement of the decennium, one (the Liverpool, No. 1) had passed away. The total number of fire insurance offices in the United Kingdom at this date therefore appears to have been thirty-six.

1820.—The new fire offices of the decennium were almost *nil*. There was the Bristol Union Fire and Life (1814); and the National Union Mutual and Fire. Nearly all the thirty-six offices existing at the commencement of the decennium were still existing; so that we have a total of thirty-eight fire offices in the United Kingdom.

1828.—At this date was founded the Royal Standard Friendly Society, and among its features was that of granting to its members protection against loss of their effects by fire to the extent of 15*l*. each. In taking this step the society was but following the example of the earlier guilds. It will be remembered that these societies could not have undertaken this branch of insurance but from the fact of being exempted from all stamp duties.

1830.—The changes among the fire offices during the decennium now ending were considerable. The new offices were: *England* (town), the Beacon (1821); Guardian Fire and Life (1821); Alliance Fire and Life (1824); Palladium No. 2 Fire and Life (1824); Ægis (1825); Protector (1825). In the provinces the Norwich Union [based upon the Norwich Union of 1797] (1822); Canterbury and East Kent (1823); Berkshire and Gloucester Fire and Life (1824); Essex Economic (1824); Herts, Cambridge, and County Fire and Life (1824); Leeds and Yorkshire Fire and Life (1824); Manchester Fire and Life (1824); South Devon Fire and Life (1824); Sussex County and General Fire and Life (1824); Yorkshire Fire and Life (1824); Surrey, Sussex, and Southwark Fire and Life (1825); Sheffield Fire and Life (1826); Shields, North and South (1826); Suffolk Amicable and General (1825); Norwich Equitable [new] (1829). In *Scotland* the new fire offices were Insurance Company of Scotland (1821); Forfarshire and Perthshire (1823); Scottish Union (1824); Aberdeen Fire and Life (1825). In *Ireland*, National Assurance Fire, Life and Mutual

(1822); Royal Irish (1823); Shamrock (1823); Patriotic (1824); Alliance, Irish, Fire, Life and Mutual (1825); Phœnix, Irish (1825). In all (not counting Norwich Union as new) twenty-nine.

The fire offices which had passed away were fourteen, among which we may specify the British Commercial (founded 1820); Palladium No. 2 (1824); Bath, old (date of establishment not known); Finchingfield (1804); Gloucestershire (date of establishment unknown); Canterbury and East Kent (1823). The gain in the decennium appears to have been fourteen, leaving a total of fifty-three fire insurance offices existing. We suspect the number is slightly understated. In future we shall have the duty returns to help us.

1840.—The changes in this decennium are numerous rather than important. Some offices had passed out of existence altogether; others had sprung up to take their places. Thus, while there were but fifteen town offices returned in 1831, there were now twenty; while as against twenty-five country offices in 1831, there were now but twenty-three. But twelve *Scotch*, and four *Irish* offices were now brought into the returns—making a total of fifty-nine.

The new offices in *England* embraced the District (1834); York and London (1834); Leicestershire (1834); Licensed Victuallers (1835); Newcastle and North *England* (1835); Nottingham and Derby (1835); St. George No. 2 (1835); Coventry and Warwickshire (1836); Independent and West Middlesex (1836); Licensed Victuallers Fire and Life (1836); Liverpool and London (1836); Protestant Dissenters Fire and Life (1837); Shropshire and North Wales (1837); Benevolent Fire and Life (1838); English and Scottish Law Fire and Life (1849); London, Edinburgh and Dublin Fire and Life (1839); Church of England Fire and Life (1840); Royal Farmers Fire and Life (1840). In *Scotland*, County and City of Perth (1836); Glasgow (1836); Metellus (1838); North of Scotland (1837); Morayshire (1840). Total, twenty-four. Four of which were strictly class offices.

The offices which had passed out of existence were the Independent and West Middlesex (1840); Protector (1835); Bath Sun (1838); Berks, Gloucester and Provincial (1831); Bristol (1839); Bristol Crown (1837); Coventry and Warwick (1839); Hereford, Cambridge and County (1831); Newcastle and North of England (1838); Norwich Equitable (1834); Salamander (1835); North and South Shields (1836). In *Scotland*, the Metellus; and in *Ireland*, the Commercial (1837); and the Hibernian (1838). Total discontinued, fifteen; leaving gain of nine on the decennium.

1850.—The new fire offices established in *England* in the decennium were:—

1841. South of England Fire and Life
1844. Burnley Mutual
„ Cambrian Fire and Life
„ Kent Mutual
„ North of England Fire and Life
„ Preserver Fire and Life
1845. Cambrian and General Fire and Life
„ Halifax, Bradford, &c., Fire and Life
„ Law
„ Preston and North Lancashire
„ Royal Fire and Life
„ Sheffield, Rotherham, &c.
„ Star
1846. Legal and Commercial
1847. Architects and Builders Fire and Life
„ Defender Fire and Life
„ North of England Fire and Life
1848. British Empire Mutual
„ National Mercantile
1849. Anchor Fire and Life
„ British „
1850. Equitable
„ Brighton and Sussex Mutual
„ English and Cambrian Fire and Life
„ National Guardian Fire and Life

In *Scotland* the new offices were:—

1841. National and Scottish Fire and Life
1844. Western Fire and Life
1845. Bon Accord Fire and Life

The offices which ceased to exist in the decennium were, in *England*, the Benevolent (founded 1831), Brighton and Sussex (1841), British Union (1844), British (1843), English and Scottish Law (1843), Leicestershire and Midland (1843), Preston and North Lancashire (1848), Reading (1841), Winchester, Hants, &c. (1847), York and London (1842). In *Scotland*, County and City of Perth (1844), Friendly (1847), Glasgow (1841), Western (1847). In *Ireland*, the British and Irish (1843). Total fifteen, leaving a gain of thirteen in the decennium. It is noticeable that two of the offices which passed away dated from 1720, viz., the Friendly of Edinburgh, and the British and Irish of Dublin.

1858.—The leading British insurance offices combined this year —after repeated attempts in the same direction—in view of regulating rates, &c., and became what is now known as the Tariff Association, or the Association of British Fire Offices. Its services have been very considerable not only to the offices, but to the public; for uniformity of operation in a business of such extended ramifications as fire insurance must be held to be of great value.

1860.—This decennium shows many changes. First, whereas there were thirty-two town offices included in the list in the previous decennium, there are now but twenty-five, several of which are new. The town offices which had passed out of existence were the Monarch, Legal and Commercial, Defender, Star, National Mercantile, British Empire Mutual, British Anchor, Equitable, National Guardian, Times, English and Cambrian, British Provident, Cambrian Universal. Of the country offices there had passed away the Newcastle-upon-Tyne, the Halifax, Bradford and Keightley, the North of England, Essex Economic, Kent Mutual, and the Brighton

and Sussex. Of the *Scotch* offices there had passed away the Forfarshire and Perth; and no new one had been created. In *Ireland*, there was no change in the native offices.

The new offices of the decennium were:—

1851. Brewers and Distillers.	1852. Protestant	1854. London Mercantile
„ Lincolnshire	„ Provincial (Welsh)	„ State
„ Sceptre	„ Sceptre of England	„ United Brothers
„ Times	„ Unity	1855. Emperor
1852. Absolute Security	1853. Beacon	„ Hull and London
„ Adamant	„ Eclipse	„ Saxon
„ Athenæum	„ General Indemnity	„ United Friendly Brothers
„ Counties Union	„ Realm	1856. Bank of London
„ English and Foreign	„ Self-Reliance	1857. Queen
„ Era	1854. Durham and Northumberland	1858. } None
„ Lancashire	„ Law Union	1859. } None
„ National Provincial		1860. } None

1861.—The great fire in Tooley Street, London Bridge, this year, introduced some important changes into the practice regarding mercantile insurance in London, alike in the rates charged, and in the storage of goods.

1870.—The leading incident in the history of fire insurance this year carries us back to the origin of fire underwriting in the United Kingdom. A plan was set on foot in Manchester by which individuals were to underwrite fire risks, much as marine insurance policies are still underwritten at Lloyd's, and as fire insurance may have been conducted for a few years after the fire of London, 1666. There is, however, this differing feature in the modern scheme, viz., that the policies are underwritten by one man, holding a power from all the underwriters standing upon the risk; thus 3,000*l.* written by him would probably mean 100*l.* for thirty different individuals. The parties have adopted a legal organisation, which is known as the Mutual Fire.

The number of changes among the fire offices during the decennium had been considerable. Now that the duty has been abolished and there is no longer any need for distinction between town and county offices, we shall abolish such distinction here, and speak of the English offices generally. The Scotch and Irish offices we shall speak of distinctly, and also of the foreign offices established agencies in the United Kingdom.

The offices which had passed away were the Globe (1803), Leeds and Yorkshire (1824), Unity (1852) [these three by transfer to Liverpool, London and Globe]; the Birmingham (1805) [by transfer to the Lancashire]; the District (1834) [Birmingham];

the Sheffield (1808); the Hants, Sussex and Dorset (1803) (these three last by transfer to the Alliance).

The new offices of the decennium in *England* were :—

1861. Commercial Union
„ Mercantile
„ Volunteer Service
1862. London and Lancashire
„ Prince
1863. Alexandria
„ British Nation
„ City and County
„ Friend-in-Need
„ Hercules (No. 2)
„ Mercantile Union
„ Western
1864. Albert (Marine, &c.)
„ Birmingham Alliance
„ Home and Colonial (Marine, &c.)
„ Independent
„ London and Southwark
1865. Hercules (No. 3)
„ London and Northern
„ Non-Tariff
„ Provincial Union
1866. Household (No. 1)
„ Industrial
„ London and Manchester
„ Manchester Provident
„ Planet
1867. English (Fire and Life)
„ Permanent
„ Primitive Methodist
„ Progress (Marine, &c.)
„ Reinsurance
1868. Britannia
„ British Alliance
„ Masonic and General
„ National Provincial (No. 2)
„ United Ports (Marine, &c.)
1869. Artisan
„ Commercial Indemnity
„ King's Lynn
„ Monarch (Marine, &c.)
1870. Beehive
„ Industrial
„ London and Midland
„ Mutual (Manchester)
„ Staffordshire

The new offices in *Scotland* were the Stewarton, Dunlop, and Fenwick Mutual (1861); Town and Country (Dundee) (1862); Scottish Fire (1864); Scottish Commercial (1865); Scottish Imperial (1866); Northern Counties (1869); Border Counties (Dumfries) (1870).

In *Ireland* the Etna (1868) had been founded.

The *foreign* fire offices having agencies in the United Kingdom were the Azienda Assecuratrice (of Trieste); the Netherlands; the Concordia; Rotterdamsche and Netherlandsche; and Messrs. Dormiel. There were also registered in England two companies (fire, life, &c.), intending mainly to trade in France, viz., the International Union and La Gauloise.

1872.—There was revived in England for the first time during nearly two centuries, the idea of municipal fire insurances. In the Manchester city council, on the 2nd October this year, Mr. Alderman Hopkinson moved for a committee, "to inquire into the "desirableness and feasibility of the corporation undertaking to "insure owners of real property within the city from loss by fire." The mover thought that it was quite within the province of the corporation to undertake such a task, and that it would carry out the work better than private individuals. Fire insurance, on that ground, he argued, ought to be left in the hands of the corporation

just as they were already entrusted with parks, libraries, cemeteries, water, gas, and abattoirs, with respect to which they had given satisfaction to the community. He went on to say:—

"The Council had already a great deal to do with the prevention of fires by the regulations which they laid down as to the construction of houses, and also by the arrangements which they had made for subduing fires by their fire brigade. He found that in the five years from 1846 to 1850, the number of fires in Manchester was on an average 116 per year; the damage done to buildings averaged 12,000*l.* per year; and the rateable value of property in the city was 980,000*l.* The number of fires had gradually increased year by year, in something like proportion to the extension of the city and the increase of population; but the average of damage remained about the same. Thus in the five years from 1850 to 1855, the number of fires was 179; in the next five years it was 184; in the five years ending 1865 it was 238; and in the five from 1866 to 1871 the average per year was 293. On the other hand, the average yearly damage to real property from 1846 to 1850 was 12,000*l.*; the average in the next five years was 12,280*l.*; in the third, 11,062*l.*; in the fourth, 12,600*l.*; and in the fifth, 11,700*l.*; while the rateable value of the city had increased from 981,000*l.* to 1,700,000*l.* The reason of this he attributed to the increased efficiency of the fire brigade. Property in Manchester, in consequence of the excellent arrangements prevailing for the prevention and extinction of fires, was subject to less risk of loss than property in the surrounding towns, and he claimed for the citizens of Manchester to have the advantage of that state of things. . . . .

"*His proposal was to insure real property, not stock.* The average risk may be set down at about 12,000*l.* per year. The greatest loss that had ever taken place in one year was 36,000*l.*, which was in 1866. It might be said that some such calamity might happen to the city as had devastated Chicago. Such a fire, he contended, could not take place in a city like Manchester, where the houses were widely spread; where every effort was made in their construction to prevent the extension of fire; and where the fire brigade was so efficient. If, however, such a calamity should occur, he would leave the case of Manchester to the sympathy, or, rather, the gratitude of other towns and of other countries; for wherever there had been a disaster, Manchester, in past times, had been forward in the liberality with which it had afforded relief. *He would let a man insure in any office he pleased, or in as many offices as he pleased, but he would always have him insure in the corporation, whether he would or not.* They might ask, how could he enforce this, or compel any one to pay the premiums? He answered, by not having premiums or any payments as such at all. He would have the case simply stand in this way, that if a man had real property in the city, therefore he was insured. He would have no payments of premiums, no expenses of competition, no advertisement, no collectors. All the corporation office would have to meet would be expenses which attended losses, and the sum required out of the rates to meet those expenses, calculated on an average of the last twenty-six years, would be from 1½*d.* to 2*d.* in the pound. But he contended that, in all probability, the average yearly damage caused by fire would, under the new system, be very much diminished, because of the greater attention which would be given to the efficiency of the fire brigade. It might, perhaps, be contended that the scheme was unfair, because one man's property was subject to a great deal more risk than another's; but that objection was common to the whole system of municipal government.

What he proposed was, not that they should at once adopt his scheme, but that a committee should be appointed to inquire into the subject."

Nothing came of the proposal. I have since learned that a previous proposal of a like nature had been brought before the same body. Various schemes of State and municipal insurance will be mentioned in our sketch of the history of fire insurance in foreign countries, which forms another section of my paper.

1873.—There was founded in Manchester, the insurance institute, the objects of which are: "the reading of papers on subjects "connected with fire and life insurance; the discussion of all "questions relating thereto; and generally the promotion of a good "understanding amongst the members of the insurance profession "in Manchester." Nothing can be more laudable than such a combination of purposes. The belief has been very general that fire insurance does not afford to its students as many problems of interest as does life insurance. I trust the present paper may tend to remove such an impression.

1875.—There were quite an unusual number of fire offices founded in this and the preceding year.

The new fire offices registered in *England* during the quinquennium were as follows:—

1871. Belfast
„ British Workman's
„ „ National
„ Great Britain
„ Southern and Western
„ Universal
„ Universal Non-Tariff
„ Western Alliance (Plymouth)
1872. Morley Mutual
„ Wesleyan Methodist Trust
1873. Artisan's Co-operative
1873. Equitable (Manchester)
„ Leicestershire and North of England
„ Norwich Provident
„ Sovereign
1874. British, Colonial, and Foreign Property
„ Cotton Waste Dealers
„ Economic
„ Fire Reinsurance
„ Great National
1874. Household (No. 2)
„ Middlesex
„ National
„ Provident
„ Pudsey Mutual
„ Standard
1875. Church and Empire
„ Crown
„ Federative
„ Fire Guarantee
„ Government Security Co-operative
„ Hecla
„ Industrial
„ Millers'

The following fire insurance companies intending to transact business in France and elsewhere were registered in England:—1871, Guernsey Mutual; 1873, Gallia; L'Etoile Française; L'Union Internationale.

The following foreign offices opened branches in England:—Agricoles Caisse General; Jakor (anchor) of Moscow; Le Monde; L'Universe.

The fire offices which have passed out of existence during the quinquennium are: English (founded 1867); Industrial Fire (1870);

Universal Non-Tariff (1871); Southern and Western (1871); La Gauloise (1869); Northern Counties (1869); Town and Country (1869); Artisans' Co-operative (1873); London and Midland Fire (1870); London General Reinsurance (1873); Norwich Provident Fire (1873); Provincial (1852); Border Counties (1870); British Colonial and Foreign Property (1874); British National (1871); Great National Fire (1874); Leicestershire and North of England (1874).

The following foreign offices have withdrawn their agencies from Great Britain; Atlas, of Vienna; General, of Grünberg; Frankfurter.

The total number of British fire offices existing at the end of the year was sixty-six.

I may conclude this section of my subject with the following passage from the "Spectator" of New York, June, 1875:—"The "business of fire insurance has grown to be one of the mightiest "commercial forces of the age. It employs a vast capital, and "enrols under its banners, in this country (the United States), an "army of more than 30,000 workers. Its beneficent influence for "the security, and therefore the happiness of mankind, is too great "to be weighed and measured in figures. There is hardly an "interest, commercial or social, that is not in some way connected "with or dependent upon it; and the fire underwriter has now "become as necessary a part of the machinery of civilisation as the "lawyer, the teacher, or common carrier. Such being the case, "the loftiest intellect may not unworthily interest itself in the "scientific problems which underlie the business, and in the "methods by which it is accomplished."

IV.—*Amount of Property Requiring the Protection of Fire Insurance.*

This question can only be treated in regard to the various countries in regard to which reliable estimates have been made.

GREAT BRITAIN.

1675.—The first estimates we have relate to London only. Thus Mr. Deputy Newbold presented a petition to the corporation of London this year, wherein he states, "There are 12,000 new "brick houses in the city, of the average value of 250*l.* These "insured at 3 per cent. would produce a fund of 90,000*l.*"

1739.—Maitland, in his "History of London," published this year, endeavours to form an estimate of the value of house property within the bill of mortality, and, in doing so, gives us the following interesting details:—

The number of houses within the bill of mortality at present insured in the Hand-in-Hand Fire Office amounting to 42,676, the

same are insured at 9,231,400*l.*; and the number within the said district in the Westminster Fire Office being 7,852, they are insured at 2,059,121*l.*, which makes the number of houses 50,528, and the sum insured thereon 11,290,521*l.* He adds:—

"I endeavoured to obtain accounts from the other fire offices, but not succeeding, I shall, by the help of the above, attempt to show the constructive value of all the houses within the bills of mortality. . . .

"But first it will be necessary to acquaint the reader that the several fire offices, to prevent their being imposed upon, insure (at most) only three-fourths of the value of each house; which fourth part uninsured being added to the aforesaid sum, it will increase the same to 15,054,028*l.*, which is the constructive value of all the said houses. But as the number total of all the houses within the bills of mortality amount to 95,968, the value of the said houses, according to the aforesaid method of calculation, must amount to the sum of 28,592,463*l.* 6*s.* 10½*d.*"

He had taken very considerable pains to ascertain the total number of houses in the city, and we think with success—therefore his estimate is entitled to reliance.

1802.—Sir Frederick Morton Eden, founder of the Globe Insurance Company, made an elaborate estimate of the amount of insurable property in Great Britain and Ireland at this date. His calculation then was that 612,975,000*l.* (his figures were 12 millions less through error in casting) represented the approximate value, while 223 millions only were then insured. The following is an abstract of the items constituting the data on which his estimate was founded:—

Estimate of the Value of Property Insurable from Fire in Great Britain and Ireland, A.D. 1802.

		£
1. Value of houses, including machinery, in England and Wales		240,000,000
Value of houses, including machinery, in Scotland, one-eighth of the above		30,000,000
		270,000,000
2. Furniture in England and Wales	£120,000,000	
„ Scotland, one-eighth	15,000,000	
	135,000,000	
Stock of goods in hand, exclusive of furniture—		
Clothes	£15,550,000	
Plate	10,000,000	
Jewels and trinkets	5,000,000	
Clocks and watches	2,000,000	
Books	5,000,000	
Wine and other liquors	2,000,000	
House and table linen	3,000,000	
Horses and carriages	2,000,000	
Miscellaneous articles	5,450,000	
	50,000,000	
Scotland, say one-tenth	5,000,000	
	55,000,000	
		190,000,000

Property Insurable from Fire in Great Britain and Ireland—Contd.

	£	£
3. Agricultural stock, including wheat, barley, rye, oats, beans, rape, hops, hay, &c., value at least	52,000,000	
Of which total there would be insurable at an average (deducting what might be consumed from time to time) to the amount of	—	32,500,0000
4. British manufactures for home consumption—		
Woollen	11,000,000	
Cotton	6,000,000	
Leather	12,000,000	
Flax	2,000,000	
Hemp	2,000,000	
Glass	2,000,000	
Paper	1,500,000	
Porcelain and pottery	2,000,000	
Silk	3,000,000	
Hardware	6,000,000	
Beer	10,000,000	
Spirits	4,000,000	
Soap	1,500,000	
Salt	1,000,000	
Candles (wax and tallow)	2,000,000	
Various articles, as carriages, &c.	10,000,000	
	76,000,000	
British manufactures for exportation	40,000,000	
Foreign merchandise in Great Britain	40,000,000	
	156,000,000	
Of which total about one-fourth is insurable	—	39,000,000
Works of art, pictures, &c.	—	10,000,000
5. Shipping—1,725,940 tons	20,000,000	
Plantation ships—240,786 tons	2,000,000	
Ships on the stocks	1,000,000	
	23,000,000	
Of which suppose one-fourth insurable		5,750,000
Minerals, river craft, public buildings, arsenals, &c.		10,000,000
Total insurable property in Great Britain		557,250,000
Insurable property in Ireland, supposed to be one-tenth of that of Great Britain		55,725,000
Total insurable property in United Kingdom		612,975,000

1804.—Sir John Sinclair, in his "History of the Revenue," published this year, adopts the preceding estimate, with the exception of the last two items of 10 millions each (and some corresponding deductions), making his total 590,975,000*l.* He says, "There

"is every reason to believe that the above [modified] estimate is "not over-rated."

1857.—Mr. Brown, in a paper read before this Society, "On the "progress of fire insurance in Great Britain as compared with other "countries," considered that the value of houses and buildings in England and Wales might be taken at the figures to be stated below, and that the contents of the houses, instead of being put at one-third of the value of the buildings, as assumed by Sir F. M. Eden, might be taken at half as much again as the value of the buildings, which would give the value of these two items as follows:—

	£
Value of buildings	654,000,000
Contents of „	981,000,000
Estimated value for 1855	1,635,000,000
Insured in 1855	802,574,000

So that something less than one-half of the real value was insured.

1863.—Mr. Coode, in his able report upon fire insurance duty, said:—

The *insurable* property (against fire) in England and Wales had been estimated as follows:—

	£
Houses and buildings	750,000,000
Household furniture, &c.	253,000,000
Stock-in-trade, &c.	130,000,000
Total	1,141,000,000

To which might be added, if it could be estimated, (1) value of machinery not included; (2) value of ships and craft not covered by marine insurance. The above figures gave to every man, woman, and child of the then population an average of insurable property amounting to 57*l.* 10*s.* per head.

The *uninsurable* property in England and Wales had been estimated as follows:—

	£
Land and its modifications in England	1,815,000,000
In colonies and abroad belonging to English residents, say	100,000,000
Funds and other investments	1,500,000,000
Live stock, capital sunk in tillage and manurance, minerals unfashioned, &c., say	150,000,000
Shipping covered by marine insurance (and therefore not requiring other insurance protection)	60,000,000
Total	3,625,000,000

Mr. Coode added some other items by which he brought up the

amount to 3,825 millions, or 191*l.* 10*s.* per head for every man, woman, and child of the then population.

1871.—As a key to the continuous increase of insurable property in one branch alone, we present the following figures from the "Builder:"—"We have built in England and Wales, in the way "of dwelling houses alone, upwards of 1,000 millions' worth of "property, roughly speaking, since the year 1801, and within the "ten years only between 1861 and 1871 we have built dwelling "houses to the value of more than 220 millions sterling."

Again, I find it impossible to furnish any reliable estimate of the insurable property in other countries.

V.—*Amount of Property actually Insured.*

As but very few direct statistics upon this point can be obtained in this or any other country, I am obliged to fall back upon such indirect estimates as are available. While the percentage duty was in force, we had indeed a fair approximate means of measurement. This was the only good feature which attached to the otherwise objectionable impost. I shall avail myself of the estimates based upon the duty return to the utmost extent.

1682.—If we consider that the business of fire insurance began in earnest in 1682, we shall hereafter see that by 1782 the sum insured was 130 millions. Assuming this sum to have been steadily progressing during the preceding century, it gives a ratio of progress of 1,300,000*l.* per annum. This is to be regarded as approximate only, as no doubt the annual increase in the later periods was much greater than in the earlier ones.

1776.—Dr. Adam Smith, in his "Wealth of Nations," published this year, supposed that, "taking the whole kingdom at an average, "nineteen houses in twenty, or rather, perhaps, ninety-nine in a "hundred, were not insured from fire." (Book i, c. 10.)

1783.—The duty on fire insurance collected in England and Wales this year under the Act of 1782 amounted to 142,822*l.*, but this really included receipts for 401 days. The estimate for the year was 130,000*l.*, but this probably included some septennial insurances, as the duty for several following years showed a decrease. Or it may be that the duty operated as a discouragement to insurance. The value of property insured (taken upon the 130,000*l.* duty) is estimated at 170,533,330*l.* The duty on foreign insurances effected in England was about 2,100*l.* No return from Scotland was obtained until 1787, which would be for the year 1786. The amount was 1,315*l.*

1790.—I propose to record the progress of fire insurance decennially, unless special circumstances shall call for more frequent

notice. The duty collected in 1791, which would be upon insurances effected in this year, was in England and Wales, 113,165*l.*; in Scotland, 1,851*l.*—total, 115,016*l.* The rate still being 1*s.* 6*d.* per 100*l.* insured. The estimate of the total property insured in England and Wales upon this basis is 150,886,000*l.*

1800.—The annual amount of percentage duty in England and Wales for the year ending 5th January, 1801 (duty upon insurance of 1800), was 204,947*l.*, and in Scotland 3,614*l.*—total, 208,561*l.* The rate had been increased to 2*s.* per 100*l.* in 1797. The value of property insured in England and Wales was estimated at 204,946,000*l.*

1810.—The amount of percentage duty on fire insurance (which had undergone some changes in the rate) in England and Wales for the year ending 5th January, 1811 (upon the insurance of 1810), was 434,158*l.*; in Scotland 16,435*l.*, and in Ireland 22,408*l.*—total, 473,001*l.* The duty had been at the rate of 2*s.* 6*d.* per 100*l.* insured since 1805. The total amount of property insurance in England and Wales was estimated at 347,325,600*l.* Of the above duty no less than 381,165*l.* 0*s.* 9*d.* was collected by fifteen London offices, which had therefore a monopoly of the whole fire insurance business of the country.

1820.—The amount of percentage duty on fire insurance in England and Wales for the financial year ending 5th January, 1821, was 586,898*l.*; in Scotland, 22,244*l.*; in Ireland, 21,737*l.*—total, 630,879*l.* The rate had been at 3*s.* per 100*l.* since 1816; but the duty on colonial insurance had been repealed since 1810. The value of property insured in England and Wales was estimated from the duty at 391,265,300*l.*

1830.—The annual percentage duty on fire insurance collected upon insurance in England and Wales for the financial year ending 5th January, 1831, was 717,275*l.*; for Scotland, 51,579*l.*; for Ireland, 29,222*l.*—total, 798,076*l.* The rate had been 3*s.* per 100*l.* insured through the decennium. The value of insured property in England and Wales at this date was estimated from the duty at 478,183,300*l.*

1838.—The first volume of the *Journal* of this Society, published this year, contained an article, "Fires in London, with an account "of the London fire engine establishment." It was written by Mr. R. W. Rawson, and embodies the first systematic inquiry into the statistics of fires of which we have any knowledge. Its value has now, however, been superseded by the more complete details we have presented under another division of this paper. He made inquiries regarding the insurance in the case of 1,065 fires happening in 1836-37, with the following results:—

Building and contents insured	342 = 32	per cent.
„ only	120 = 11	„
Contents „	180 = 17	„
Neither insured	423 = 40	„

"If this calculation (he says) holds good for the whole of London, "two-fifths of the houses in the metropolis are entirely uninsured, "and one-third only are insured for both the buildings and con- "tents."

1840.—The annual percentage duty on fire insurance collected upon insurance in England and Wales for the financial year ending 5th January, 1841, was 885,691*l.*; in Scotland, 59,746*l.*; in Ireland, 45,348*l.*—total, 990,785*l.* The rate remained at 3*s.*, but all agricultural insurance had been exempted from duty since 24th June, 1833. The value of insured property in England and Wales was estimated at 641,448,716*l.*, including 50,988,016*l.*, the value of agricultural insurance exempted from duty.

1845.—Mr. G. R. Porter, in his "Progress of the Nation" (edit. 1847), gives the following returns of the sums insured against fire in the three divisions of the kingdom at the following dates, and the percentage of aggregate increase (it will be observed that his estimates differ slightly from those previously presented):—

Years.	England.	Scotland.	Ireland.	United Kingdom.	Percentage of Increase on 1801.
	£	£	£	£	
1801	219,623,954	3,786,146	8,832,125	232,242,225	—
'11	340,296,000	13,106,400	13,302,400	366,704,880	57·89
'21	381,406,000	13.824,666	12,806,666	408,037,332	75·69
'31	473,073,333	34,109,333	19,472,666	526,655,332	126·77
'41	605,878,933	44,655,300	31,005,606	681,539,839	193·45
'45	640,680,500	47,122,900	34,277,900	722,081,300	210·91

1848.—The amount of property insured against loss by fire in the United Kingdom was 811 millions, and the nominal capital subscribed to guarantee the due fulfilment of these engagements at the end of 1849 was computed at more than 50,000,000*l.*, by fifty-nine companies; some of them, however, guaranteeing under the same capital also life and marine risks.

1849.—The total duty received in 1850 (for 1849) in the United Kingdom was 1,171,629*l.* 16*s.*, representing a sum insured of 781,086,533*l.*, besides 61,805,427*l.* farming stock insurance, which is exempt from duty, making a total of 842,891,960*l.* This large amount of insurance was steadily on the increase. Since 1844 it had increased 12 per cent., or 2 per cent. per annum, and in the last two years at the rate of 2·785 per cent. per annum.

1850.—The annual percentage duty on fire insurance in England and Wales for the financial year ending 5th January, 1851, was 1,042,396*l.*; in Scotland, 65,875*l.*; in Ireland, 51,259*l.*—total, 1,159,530*l.* The rate had remained at 3*s.* The value of insured property in England and Wales was estimated at 752,092,946*l.*, including 57,162,246*l.*, amount of agricultural insurance, exempted from duty.

In vol. i of the "Assurance Magazine" (p. 317), is an article from the pen of Mr. Brown on the increase of fire insurance in Great Britain from 1844 to 1850; wherein it was shown that the rate of increase in the sums insured by all the offices had been 10·39 per cent., or 1·73 per annum; for the last two years of the period the increase had been 1·96 per cent. per annum. The increase in the town offices during the whole period had been 12 per cent., or 2 per cent. per annum; in the last two years 2·78 per cent. per annum. In the country offices the increase over the whole period had been 2·29 per cent., but in the last two years only 1·08 per cent. per annum. On the farming stock insurance the increase from 1844 to 1848 had been 7·14 per cent., or 1·785 per cent. per annum; but between 1848 and 1850 there had been a falling off; so that over the whole period the increase had only been 4·1 per cent. or ·683 per cent. per annum. But these insurances fluctuate with the seasons. In Ireland the progress of fire insurance had been slow. In the six years the increase was only 2·90 per cent., or 8·48 per cent. per annum. In Scotland there had been an actual falling off; but there were signs of recovery.

His next point is the increasing percentage of insurance to fires, in the investigation of which he had been aided by Mr. Baddeley's reports from 1836 to 1849. The following table gives the results over several periods—

Proportion per Cent. of Insurances ascertained to have been Effected in Cases of Fire.

	1836-37.	1838-42.	1843-47.	1848-49.	Whole Period, 1836-49.
Buildings and contents .	32·11	37·33	37·73	41·27	37·58
„ only	11·27	14·37	16·23	17·22	15·24
Contents „	16·90	15·49	14·30	12·54	14·69
Neither	39·72	32·81	31·74	28·97	32·49
	100·00	100·00	100·00	100·00	100·00

These particulars relate exclusively to property in which the fire originated, not comprising the cases in which damage was done to the contiguous premises. Mr. Brown says hereon: —

"Thus it appears that on the average of the whole period, 67½ per cent. have been insured in some way or other, and 32½ per cent. not insured at all, and that the proportion not insured at all has diminished from nearly 40 per cent. in the first period to 29 per cent. in the last; whilst of those who have had the prudence to insure both buildings and contents, the proportion has increased from 32 per cent. in the first, to upwards of 41 per cent. in the last period. Even the gradual increase of the 'buildings only' insured, compared with the diminution of 'contents only' insured, is probably a favourable feature, since buildings may, in most cases, be presumed to require larger insurance than the contents, except in the case of some particular trades. This is a question, however, which, though interesting to the political economist in estimating the increasing wealth or prudent habits of the people, can only be answered by the insurance companies, from the combination of facts, which I fear it will be some time before we can expect to have brought together, or the results made public. The proportions given above are deduced from the reports of the fires, as stated above, only as regards the buildings in which they commenced."

1851.—The gross sum insured against fire in the United Kingdom this year was found from the duty returns, &c., to be 852,000,000*l.* This included farming stock.

1855.—At the International Statistical Congress held in Paris this year, it was recommended to collect the statistics of all branches of insurance, in such a form that the progress of nations therein might be compared. A similar recommendation has been made at some of the later congresses, but the task is a difficult one, and a plan suited to the views and requirements of all the nations has to be agreed upon. (See 1872.)

1855.—The total sum insured in the Sun Fire this year, as calculated from the duty returns, was 140,442,000*l.* This probably was below the actual amount, unless the short term insurances were spread pretty equally over the year. It was also exclusive of foreign insurance, which paid no duty in the United Kingdom.

Mr. Hyde Clarke published in the "Land and Building News" this year an article Statistics of Fire Insurance in 1853 and 1854. In the "Post Magazine" of 14th July this year, there is a valuable letter by "Investigator," showing how, by reason of short term fire policies, the sum insured was much greater than is indicated by the duty returns merely.

1857.—This year Mr. Samuel Brown read before this Society a paper on the progress of fire insurance in Great Britain as compared with other countries, which paper is printed in the *Journal*, vol. xx, p. 135. It is necessary for our present purposes to reproduce one or two of its paragraphs here. Thus:—

"Notwithstanding the importance of the subject, and the enormous amount of property which is known to be brought within the benefits of the system, no record exists of the actual amount insured, nor are there any public or private documents from which the real facts can be drawn. The nearest approximation to the truth

is obtained from the returns of the Government duty, since it was first charged as a percentage on the sums insured, commencing with 24th June, 1782. . . . And as insurances against fire effected by British offices on property in foreign countries were exempted from the percentage duty from the 5th July, 1786, the most careful estimate we can make may still differ several millions from the actual amount of business transacted by the British offices. Even when we have recourse to the best means in our power, and endeavour to analyse the returns of duty paid into the stamp offices, which have been called for by various members in different years, and printed by order of the House of Commons, we find the labour so great and the liability to error so increased, from the manner in which the statements have been presented, that scarcely any of the printed totals for any one year precisely agree. For England the accounts of the sums paid into the stamp office for the fire insurance duties are printed separately for each office, London and country, with the allowance at 4 per cent. for collection in London, and 5 per cent. for collection in the country in each of the four quarters, all the items being given to shillings and pence. No attempt is made to bring together the total duty paid by each office in the year, nor by the London or country offices collectively; and, without the great labour of copying the whole of the returns into a new form, it is very difficult to obtain accuracy in the totals. If any error has occurred in the printing, it is equally impossible to ascertain in which column the error lies. The same remark applies to the returns for Ireland, both for the insurance duties and the farming stock exempt, and, with the exception of the small portion of the returns from Scotland, the whole document is by no means creditable to the department from which it is issued."

Again:—

"It is to be regretted that no accurate computation can be given of the amount of insurance effected on foreign property. Only a few of the offices carry on this class of business. Mr. F. G. Smith is disposed to estimate the total home and foreign business for last year at not less than 1,500 millions; but I have been favoured with the opinion of a gentleman, whose position and experience gives the greatest weight to his judgment, that the whole of the foreign fire insurance of Great Britain, including that of the colonies, does not exceed 25,000,000*l.* Between statements differing so widely it is impossible to give any accurate computation, but the greater part of those whom I consulted considered that from 100 to 200 millions were more probably the limits, and I have, therefore, assumed 125 millions, being only one-fourth of the highest estimate."

None but those who have entered upon such an inquiry as the present, can fully realise the difficulties arising from the carelessness and incompleteness of official returns, where they exist at all.

But the most important part of Mr. Brown's then labour was that, wherein he recalculated the returns of sums insured in Great Britain and in various continental countries as at the end of 1856, together with the amount of premiums received and losses paid during that year, of which the following is a short abstract:—

In Great Britain, France, Germany, Belgium, Sweden, Denmark, Russia, Poland, and United States—

	£
Total sums insured	4,482,500,000
„ annual premiums	8,217,000
Estimated losses	4,772,800

The figures for Great Britain alone were: sums insured as shown by duty returns, 927,000,000*l.*, farming stock exempt, 70,000,000*l.*, foreign and colonial business about 125,000,000*l.*, total insured 1,122,000,000*l.*; annual premiums thereon 1,953,000*l.*, losses 976,500*l.* He says by way of explanation—"From this "rough approximation it appears that the total of the amount of "fire insurance in the countries, or in the offices referred to in the "preceding pages, and estimated to the present date, amounts to "the large sum of 4,482½ millions sterling, though it is evident "that it by no means gives an adequate view of the total amount "of property insured against fire in Europe and America. A vast "amount, protected by Governments or private associations, must "still have escaped notice."

This was the first general estimate of the amount of fire insurance existing in the western nations which had been made.

1860.—The annual percentage duty on fire insurance in England and Wales for the financial year ending 5th January, 1861, was 1,375,798*l.*; in Scotland, 106,250*l.*; in Ireland, 76,744*l.*; total, 1,558,792*l.* The rate remained at 3*s.*; reinsurances were exempted from duty from 1856; but in practice they had never paid any. Workmen's tools up to 20*l.* were exempted from duty by enactment this year, and could not have affected the returns. The value of insured property in England and Wales was estimated at 983,161,773*l.*, including 65,963,073*l.* value of agricultural insurance exempted from duty.

1861.—The number of fire policies in force this year in the various fire offices in Great Britain was 1,389,304; and Mr. Coode (in his report upon the fire insurance duties, 1863) estimated that if fire policies were freely obtainable under 250*l.*, the number would be doubled; and if freely obtainable under 100*l.*, trebled; and that the amount of property insured in the first case would be increased by one-eighteenth, and in the second case by one-third. Undoubtedly (he adds), the greatest number of persons, indeed nearly all, whose destructible property is not worth 300*l.* are uninsured. "The "value of the aggregate of their destructible property very probably "approaches that of all the more wealthy classes." Mr. Coode also gives the following:—

A Statement showing the Total Number of New Policies Issued in England, and Amount of Duty Paid thereon, during the Quarter ended Lady-day, 1862, by the several Offices undermentioned.

Office.	New Policies.	Duty.
		£
Sun	6,225	8,082
Royal Farmers	457	344
Atlas	1,472	2,022
County	2,664	2,633
Law Union	475	364
Alliance	1,076	2,582
Imperial	2,565	4,685
Law	1,154	1,630
Liverpool and London	3,809	5,360
Manchester	1,751	2,295
Norwich Union	2,907	2,846
Royal	5,395	6,572
Union	1,143	1,322
West of England	2,248	2,669
Phœnix	4,749	6,163
Total	38,090	49,569

Fire Insurance Duty. A Statement of the Number of New Policies under 100l. Issued in England, Lady-day Quarter, 1862, for the Respective Amounts in the several Offices as undermentioned.

Office.	Above 10*l.* to 20*l.* Inclusive.	Above 20*l.* to 50*l.* Inclusive.	Above 50*l.* to 100*l.* Inclusive.	Total.
				£
Sun	—	107	782	889
Royal Farmers	—	16	66	83
Atlas	2	12	101	115
County	1	61	280	342
Law Union	—	7	54	61
Alliance	3	39	122	164
Imperial	1	51	195	247
Law	—	2	51	53
Liverpool and London	12	52	308	372
Manchester	—	20	140	160
Norwich Union	—	108	394	502
Royal	—	61	445	506
Union	—	10	126	136
West of England	—	8	228	236
Phœnix	—	60	372	432
Total	19	614	3,664	4,297

1862.—A select parliamentary committee was appointed "to "inquire into the state of legislation, and of any existing arrange- "ments for the protection of life and property against fires in the "metropolis." There was some statistical evidence taken, which falls to be noticed here:

Mr. W. M. Browne, secretary of Westminster Fire, and hon. secretary of London fire engine establishment, estimated the amount of property in London insured by the various offices as being 266,000,000*l.*; and the amount of premiums paid for such insurance at from 340,000*l.* to 350,000*l.* The contribution towards the maintenance of the then brigade amounted to about 2*d.* on each 100*l.* insured in London. (Q. 285–6.) There was probably some 15,000,000*l.* in addition insured by offices which did not contribute to the brigade expenses. (461.)

Mr. John Drummond, one of the managers of the Sun Fire, considered the sum insured against fire in the metropolitan district to be from 280,000,000*l.* to 290,000,000*l.* (1660.)

Mr. William Newmarch, then secretary of Globe Insurance Company, considered that there was insured in the metropolitan area, *i.e.*, six miles round Charing Cross, "about 300 millions "sterling, out of about 900 millions at risk." Under the system then in force he considered that those who insured the lesser sum actually paid for the protection of the larger sum—a very great injustice. (4043–48.)

Investigation showed that for the one hundred and sixty-eight years from 1694, when stamp duty was first imposed upon policies of insurance, down to this date (1862), the rate of increase in the sums insured by the British offices had been six millions sterling per annum; while during the forty-seven years from 1815, when the duty was increased to 3*s.* per 100*l.* insured, the annual increase had averaged 13¼ millions. The business had increased in spite of the restrictions imposed upon it. The increase was due to the growth of commerce. The figures showed that no less than 46 millions more was insured this year than in 1861.

At the close of this year an estimate was made from the fire insurance duty returns of the increase of insured property during the twelve years from 1851 (both inclusive). The increase was found to be no less than 312 millions sterling; but this did not include farming stock, upon which no duty was payable. This too had increased 15 millions during the like period. The total increase was therefore 327 millions. The gross sum insured in 1862 was found to be 1,200 millions sterling.

1863.—Mr. Coode's report on the fire insurance duties (already noticed) was published this year, and I must here render some of the facts it contained.

The property actually insured in 1862 he found amounted to 1,007,035,014*l.* leaving 133,965,986*l.* uninsured—plus the value of the items not included in the values of insurable property. Estimating these for the purpose of completing this survey, he considered that some 460 millions remained uninsured, which might be insured.

But a good deal of this uninsured property consisted of furniture and stock-in-trade in such small quantities individually as to be practically excluded from insurance by the then regulations of the fire insurance offices—many of which would not issue a policy carrying a less premium than 3*s*.

In England and Wales then, property was permanently insured to the extent of 1,007 millions. Of this, about 600 millions of house property and furniture was insured for about two-thirds of its value, and represented therefore 900 millions worth of property. About 400 millions of insurance on stock-in-trade and commerce represent transitory stocks changing generally from four to twelve times in a year, amounting probably to more than 2,000 millions in the year. The 1,007 millions of *actual* insurance probably therefore represented more than 3,000 millions of *effectual* insurance. This was put forward to meet the argument that the fire insurance duty was a tax of 200 per cent. upon insurance.

Regarding the various estimates as to the proportions of insured and uninsured property made by other persons, Mr. Coode remarks :—

> "Two eminent persons estimate the proportions in money, and one of them says there still exists in London 80 per cent. in value of property uninsured, and remaining to be brought within the benefits of insurance. The other of these, of yet greater authority, estimates the value of property in the metropolis actually insured at 300,000,000*l*., and of the uninsured at 600,000,000*l*., or the uninsured as two to one of the insured. This estimate is adopted in the petitions presented to parliament for the repeal of the duty. A more common estimate adopted by experienced officers of insurance companies is that one-half of the property in the whole country is *un*insured. But equally eminent and experienced persons, advocates also of the reduction of the duty, wholly discredit even this last estimate, and have assured me that their experience does not justify an estimate of one-third of all the property in the country as being uninsured."

On this point Mr. Coode further remarks with some force, that "when instead of values, which the fire returns do not and cannot "estimate, we give our attention only to the number of properties "damaged or destroyed, which is all that the fire returns show, it "will be found that by far the greater number of the uninsured "and uninsurable property consists of the smallest tenements, to a "great extent mostly wooden out-houses of the slightest construc- "tion, in the worst neighbourhoods, and of the very lowest value of "any class of buildings."

He next proceeds to consider the effect of the fiscal changes in the percentage duty on the progress of fire insurance; and as the result, furnishes the facts given in the following table :—

Periods.	Percentage Duty.	Average Annual Value of Property Insured.	Progress in Periods.	Rate of Annual Increase.
	s. d.	Mlns.	Mlns. increase.	Mlns.
88 years, 1694–1782	None	—	200 (?)	$2\frac{2}{3}$ (?)
14 „ 1782–83 to 1797	at 1 6	156	$12\frac{1}{2}$	$\frac{9}{10}$
8 „ '97–1804	„ 2 –	207	51	$6\frac{4}{10}$
11 „ 1806–15	„ 2 6	316	109	10
6 „ '16–21	„ 3 –	388	72	12
5 „ '22–26	„	415	27	$5\frac{2}{3}$
5 „ '27–31	„	467	52	$10\frac{2}{5}$
5 „ '32–36	„	514	47	$9\frac{2}{5}$
5 „ '37–41	„	596	82	$16\frac{2}{5}$
5 „ '42–46	„	673	77	$15\frac{2}{5}$
5 „ '47–51	„	724	51	$10\frac{1}{5}$
5 „ '52–56	„	816	92	$18\frac{2}{5}$
5 „ '57–61	„	941	125	25
1 year, '62.....	„	1,007	46	46

The following is a quinquennial abstract of Mr. Coode's table of sums insured in England and Wales, as calculated from the duty returns; but including in 1835 and downwards the amount insured on farming stock, although exempted from duty :—

Aggregate Property Insured in England and Wales.

	£		£		£
1785	133,777,330	1815	389,232,000	1845	681,888,872
'90	144,748,000	'20	396,841,300	'50	738,106,239
'95	177,563,300	'25	427,700,000	'55	844,252,857
1800	211,392,300	'30	482,215,300	'60	956,876,279
'05	248,200,000	'35	521,183,303	'68	1,504,164,000
'10	324,829,000	'40	625,106,328		

The wonderful development of the business of fire insurance in England is shown in these figures. They do not include Scotland or Ireland.

Mr. Coode next entered upon a somewhat new aspect of the subject, and pointed out, that as to all trades whatever, wholesale or retail, the insurance or a year *spreads over and protects all the stock in hand during that year.* Thus, 100*l.* insured would cover above 15,000*l.* of a butcher's or a poulterer's stock in a year; 30,000*l.* of a fishmonger's stock, 1,200*l.* of any trader changing his stock twelve times a-year. He illustrates the point more in detail. The greatest retail trades of the country, the provision trades, are carried on with stocks at all times extremely small in comparison with the amount of the annual aggregate of transactions. Bakers rarely have a stock in hand for the week's consumption; butchers from two to three days' consumption; fishmongers more than one day's; poulterers two days'; greengrocers three days'; grocers

three weeks'; coal merchants one week's consumption. It is greatly to under estimate the frequency of the change of stock of these great trades to put it at only fifty times a-year.

In the wholesale trades, the average stock in hand corresponds with the rate at which the producers or importers can bring the commodities to the market. Of imported provisions there is ordinarily not more than a few days' consumption on hand—except of groceries, which may occasionally reach an average of three months. Of cotton, it is very rarely that stock equal to three months' consumption is on hand. Our home agricultural production is that of which the largest stock is commonly on hand. The farmer's or grazier's live stock may at any time equal a year's sale, the grazier's even two or three; but these are to a very small extent subject to loss by fire or the subject of fire insurance at all. A farmer's dead stock of corn, hay, and other crops, immediately after a harvest, constitutes the stock of that produce of a whole year, and he must, to be safe, insure on the largest stock that may be destructible by fire.

1868.—This is the last year for which we have complete returns of the annual percentage duty on fire insurance. The amount returned in England and Wales was 921,486*l.*; in Scotland, 99,222*l.*; in Ireland, 51,923*l.*; total, 1,072,631*l.* But to account for these diminished figures, it must be stated that while insurance on stock-in-trade had been reduced to 1*s.* 6*d.* per 100*l.* in 1864, in 1866 the rate on all insurance had been decreased to that amount, or one-half the former rate. The value of insured property in England and Wales was estimated to have increased to 1,504,164,000*l.*; this was including 75,419,303*l.* value of agricultural insurance exempted.

1872.—Professor Anderson Kirkwood estimated that the extent of inland fire insurance in the United Kingdom in 1872 was 1,900,000,000*l.* The aggregate premiums received by the offices, he says, had been estimated at 7,000,000*l.* per annum.

At the International Statistical Congress held at St. Petersburg this year, Professor G. Mayr, of Munich, was appointed to collate insurance statistics. But up to the close of 1873 he had made no actual progress in the work.

1874.—The abolition of the percentage duty on fire insurance deprived us of an element of statistical knowledge, which was the only good feature associated with the tax. Under the Metropolitan Fire Brigade Act, 1865, the fire offices transacting business in the metropolitan district are required to contribute *pro rata* to the Metropolitan Board of Works in part support of the brigade. By means of the returns made by the offices for this purpose it was found that the fire insurance in force in the metropolitan district in the quarter ending 1st April this year reached 488,500,000*l.*—being

an increase of 21 millions in the year. The following return shows the relative positions of the offices regarding London business:—

Name of Insurance Company.	Business Done in 1874, as per Certified Returns in Form prescribed by the Board.	Amount of Yearly Contribution at 35*l.* per Million.			Name of Insurance Company.	Business Done in 1874, as per Certified Returns in Form prescribed by the Board.	Amount of Yearly Contribution at 35*l.* per Million.		
	£	£	*s.*	*d.*		£	£	*s.*	*d.*
Sun	73,136,500	2,259	15	8	Britannia	1,000,000	35	–	–
Phœnix	55,340,950	1,936	18	8	Great Britain	1,000,000	35	–	–
North British and Mercantile	34,642,520	1,212	9	6	National of Ireland	1,000,000	35	–	–
Liverpool and London and Globe	32,434,822	1,135	4	4	Scottish Provincial	1,000,000	35	–	–
					,, Imperial	929,957	32	11	–
Law	32,257,927	1,132	10	8	Azienda Assicuratrice	827,519	28	19	4
Imperial	30,185,000	1,056	10	–	Staffordshire	592,397	20	14	8
Royal Exchange	29,360,818	1,027	12	8	Scottish National	578,745	20	5	–
County	24,375,617	853	3	–	Caledonian	412,919	14	9	–
Royal	23,441,360	820	9	–	Magdeburg	352,464	12	6	8
Westminster	22,046,331	771	12	4	Universal	280,018	9	16	–
London	19,748,515	691	4	–	Emperor	242,783	8	10	–
Union	17,407,817	602	5	4	Border Counties	240,000	8	8	–
Atlas	17,323,658	606	6	8	British National	211,000	7	7	8
Commercial Union	15,382,554	538	7	8	Midland Counties	163,545	5	14	8
Guardian	14,876,320	520	13	4	Norwich Equitable	150,826	5	5	8
Alliance	13,238,003	463	6	8	Belfast	143,320	5	–	4
General	8,635,797	302	5	–	Home of New York	141,095	4	18	8
Northern	8,621,363	301	15	–	Anchor	132,325	4	12	8
Norwich Union	8,541,050	298	18	–	Yorkshire	81,000	2	16	8
Hand-in-Hand	7,460,000	261	2	–	Preserver	56,958	2	–	–
Law Union	5,419,759	189	13	8	Provident	46,925	1	13	–
Yorkshire	5,237,787	183	6	8	Mutual	40,300	1	8	4
Manchester	4,748,798	166	4	–	Salop	35,800	1	5	–
Lancashire	4,500,000	158	10	–	Primitive Methodists	25,450	–	18	–
Queen	4,422,241	154	15	8	Equitable	19,100	–	13	4
London and Lancashire	3,887,989	136	1	8	La Confiance	17,650	–	12	4
Scottish Union	2,988,081	104	11	8	Shropshire and North Wales	9,680	–	6	8
London and Southwark	2,769,156	96	18	3	Essex and Suffolk	6,860	–	4	8
Kent	2,724,180	65	7	–	Household	6,150	–	4	4
Church of England	1,513,359	52	19	4	Middlesex	3,130	–	2	–
Scottish	1,473,000	51	11	–	Patriotic	1,350	–	1	–
Royal Farmers	1,138,025	39	16	8					
Scottish Commercial	1,017,413	35	11	–	Total	540,146,582	18,905	2	8

The amount of insurance in the metropolis appears to be progressing at the rate of about 20 millions sterling per annum.

Finally, I have to endeavour to estimate the bulk of the fire insurance business of the world. It can only be an estimate based upon the best known probabilities. The prospectus of the Fire Reinsurance Corporation (issued in 1874) gave the following

statistics as applicable to this year: There was in Great Britain and her colonies more than 100 fire insurance offices possessing a premium income ranging from 10,000*l.* to over a million sterling per annum. On the continent of Europe there were about 150 similar companies; and in the United States more than 300. Their aggregate incomes were estimated at 60,000,000*l.* per annum. I suspect this to be too low an estimate. At all events, the aggregate of the smaller companies has to be added, which would probably put on another 10 millions—making the aggregate income of the fire offices 70,000,000*l.* per annum.

VI.—*General Review and Conclusions.*

I trust the purport of the preceding arrangement of facts and data may be apparent to the mind of the reader. A few words of recapitulation however seem desirable. In the first place the measures of protection taken in view of preventing fire have never, at any period of our history, been really efficacious, in the sense of preventing fires entirely. Probably they never could be under any circumstances—accidents will happen. In a rude state of society individual losses are usually small, but as communities advance property accumulates; and then protection to individuals becomes requisite. It was this necessity for protection of individual properties which first gave rise to the idea of fire insurance, as it had previously given rise to marine insurance. The State very rarely furnishes a full measure of indemnity, and it is not always either convenient or wise to indicate the precise extent of individual accumulation. It is indeed more than likely that but for the great fire of London, 1666, fire insurance would have taken a State or Municipal basis here in Great Britain, as it had I suspect before that date (if it existed at all) in other parts of Europe. All the proposals which I have enumerated as having been made previously were on that basis. The magnitude of that conflagration ought to have afforded a lesson against municipal insurance, and I suspect did in the minds of reflecting men. It may be that this was the real reason why the scheme of the corporation of London already noticed did not flourish. It is certain that when the scheme of municipal insurance was brought into competition with that of trading companies specially organised for the business, the former went to the wall; it has been, and is so now, in almost every case where real competition between the two systems is permitted. Then, again, municipal fire insurance, however possible it may be in regard to *buildings*, is almost impracticable for insurance of stock in trade, or even household effects.

Looking at the facts as they stand, we have in the latter half of the seventeenth century fire insurance associations organised as

trading companies, and the only scheme of municipal fire insurance ever organised in Great Britain, speedily dying out as a failure. I do not think the scheme of the corporation of London ever had a very fair chance of success, quite apart from its merits; but that I am not going into now. My immediate purpose here is rather to consider how the scheme of fire insurance as established with us, and the measures of fire protection, which at least up to that period had been always regarded as a clear municipal obligation, have since acted and reacted upon each other. It was very natural that when the trading insurance associations were seen, or supposed, to be reaping profits from their business, that the municipal authorities should think and perhaps say, among themselves—"May we not "leave it to these associations who have now taken up the affair of "insurance to provide the appliances for fire extinction?" And was it not equally natural that the managers of the fire offices should soon see it to be to their interest to take all means in their power to extinguish fires, in view of lessening the loss on property insured with them? And to this end their firemen (water-men they originally called them) must appear at all fires and render service, quite irrespective of whether the particular property in flames was insured with them or even the properties next to it; for if the fire once got headway, some of the insured properties would soon be reached. Thus the insurance offices soon found themselves performing what is really the duty of the municipality. In process of time too the managers of the offices would learn more fully to appreciate the necessities of the situation. They would find for instance that an abundant supply of water was necessary to the prompt extinguishment of fires, and they would endeavour to stimulate the municipal authorities in this direction. Hence good would result not simply in regard to fires, but as respects the general health of the people. So again, experience would teach the managers of the offices that fires were not only more likely to arise in badly constructed buildings, but that when they did arise greater damage resulted by reason of the rapidity with which the flames spread; hence building laws would be suggested, streets made wider, and many other obvious improvements become inaugurated.

There is indeed the reverse side to this picture. If no indemnity had been obtainable by means of fire insurance, people would have become more careful in regard to the storage of their property, buildings would have been made as nearly as possible fire proof, and every sort of precaution which individual sagacity could have devised would have been exercised—prompted by the strong stimulus of individual risk. Whereas indemnity at the hands of fire insurance offices being easily obtainable, people grew careless regarding all extra precautions, particularly where expense was

involved. Besides, as the number of fire offices increased, competition sprang into existence. This resulted first in a reduction of premiums, next in a laxity of requirements, and finally almost offered facilities to excessive valuations, and by an easy gradation to fraudulent claims. There can be no doubt whatever that too great facilities for insurance *not only prevent efforts towards the erection of fire proof buildings*—the extra cost of their construction being found greater than the difference in premiums for protection by insurance, as between buildings of the best and of the ordinary class—but far worse than all this, it leads, in the end, to arson, incendiarism, the wanton waste of property, and the commission of most atrocious crimes.

The result of this very natural, though by no means necessary conflict, if I may so call it, between the municipal authorities and the fire insurance offices, has been on the whole very unfortunate, for other reasons than those already stated. It is clearly the duty of the municipality to see to the following matters. 1. The efficient construction of all buildings in relation to the purposes for which they are intended. 2. The preventing of the storage of combustible materials in unsuitable localities, to the danger of life and property. 3. The supply of an efficient water supply for the purposes alike of health and fire extinguishment. 4. The protection of the lives and property of the inhabitants under its charge from all the mischances capable of human control, and of these fire is not only the most frequent, but the most to be dreaded. Have the municipalities of the kingdom generally performed these functions in a satisfactory—even in a reasonably complete manner—in the past: and are they doing so now? The answer is but too obvious—they have left these duties to the care of the insurance offices.

Regarding the fire offices, perhaps the greatest evil extant with them is that they have been working too much in the dark; too much on the "rule of thumb" system, of making the business pay in the whole—or endeavouring to do so—even at the expense of some inequality in the assessment of their rates of premium. As to the encouragement of crime, which we sometimes lay at their doors, by the permission of over-insurance, and the failure to prosecute in cases where fraud is but too apparent, have they not the reasonable answers—first, that over insurance is always at the risk and even the peril of those who are guilty of it where it is intentional; and next as to the punishment of offenders, may they not plead the almost blind prejudice of juries when the attempt is made to resist fraudulent claims? While further, is it not the business of the State rather than of trading corporations, to put the laws in force against wrongdoers? Can these positions be readily controverted?

Suppose for a moment fire insurance to be entirely abolished, how could the accumulated wealth of the world, that is the destructible portion of it, be protected? Fire insurance then with civilised and commercial nations is an admitted necessity. I often reflect upon the wisdom of those merchants in New York, who, after the fires of Chicago and Boston, urged the fire offices which had survived those great conflagrations to put up the rates to a paying point. They said, we can stand fluctuations in prices, and even failures among our customers, these are the ordinary vicissitudes of our trade, but if the protection of fire insurance fail us we are indeed ruined!

But now I reach the last, but almost the chief point which has been before me in the preparation of this paper, or the rather in bringing it before this Society for consideration, namely, *What is the duty of the State in this matter of Fires and Fire Insurances?* Let us here advance step by step, for upon these points I desire some expression of opinion to-night.

1. Is it not the duty of the State to require a return to be made to some central authority—say the Home Office or the Board of Trade—I despair of ever seeing the organisation of a *bureau of statistics*, such as is possessed by some countries hardly so boastful of their advancement as our own—Ought it not, I say, to be a function of the Government to require *an accurate return annually of* ALL *fires wherein life is endangered or property destroyed?* Such a return might be made either by the clerk of the peace or the chief constable of every county; by the town clerk of every city or borough. Is it generally known that *Russia* is the only country in Europe at present which boasts of such a record? Is it not to be seen at a glance what value such a return must possess even in the lowest regard of an item in our judicial statistics?

2. May it not be fairly held to be the duty of every truly enlightened Government to cause an *official inquiry to be made into the cause of every fire whereby life or property is endangered or destroyed?* Is it known that such inquiries are held in several countries of Europe; and that the fire insurance offices are desired not to pay any claim in respect of property destroyed until the result of the inquiry is known to all interested? A parliamentary committee composed of many most able members of the House of Commons reported fire inquests to be a necessity now just ten years ago. Chambers of commerce and other enlightened mercantile bodies are yearly urging its adoption. Can this be far off?

3. Dare I go a step further and inquire if a census of the estimated value and the nature of occupations of all buildings in the United Kingdom be not possible? Is it known that censuses of this nature have recently been taken, at the instance of the national

board of fire underwriters (New York), in at least two States of the American union; and that the results are now being made up, and will soon be available to the whole people of that enlightened country? If this can be done, and done cheerfully by the officials in charge of the census, in the populous States of New York and Massachusetts, why can it not be done in the United Kingdom?

If the Government were to co-operate to the extent indicated under these three heads, co-operate in a really efficient and intelligent manner, would not the business of fire insurance very soon be lifted into a very different category from that which it now occupies? We should no longer be deficient in such necessary statistics as we have had to lament the absence of in other parts of this paper; light would be thrown on points now involved in darkness; fraud would cease, because it would become too dangerous; equity would prevail, because the means to secure it would exist; the cost of insurance all round would become lessened by the gradual elimination of fraudulent claims; crime would be held in some restraint by reason of the watchful eye of justice; and as a return for all this, the fire offices might be fairly required to give annually some general statement of their affairs, such as the total amount of insurance at risk, if not in individual classes, the losses paid, and the amount of the reserves in hand.

But the *national aspect* of fires and fire insurance is by no means exhausted even yet. It has to be regarded that every fire such as we have been contemplating in this paper, involves a loss of property, leaving the loss of life for the moment entirely out of consideration. The incessant destruction occurring all around us means a serious loss of wealth in the aggregate. It assumes the shape of a national loss, for of two nations equally thrifty, that which has the larger proportion of its wealth annually burned up—taken clear away and destroyed—must in the end be behind in the race. And here it is seen that we have to leave the question of insurance entirely out of consideration. *Insurance is merely an adjustment of accounts between parties.* *A* sustains a loss, and all the letters of the alphabet come forward and take a share in it, and so *A* becomes indemnified, at the expense of its twenty-five compeers. But the loss in its aggregate is the same whoever pays it; so much of the accumulated wealth of the people is destroyed by every conflagration. It may indeed be, as some believe, that fire is the ultimate fate of all that is consumable; but the process is not usually regarded as being in operation in our very midst. Be this as it may, I ask, whatever is happening and whatever the moving cause, let us have the best information which can be had regarding it. I need not attempt to defend such a demand among the members of this Society. The fires of every country annually

consume a percentage of its wealth. It might happen that if we knew the exact measure of our loss we should take more vigorous measures than ever to avert it. Anyhow, I urge, let us have the knowledge! Does the percentage of loss in any or each particular country bear any exact relation to the percentage of accumulation in that same country? Do the countries inhabited by different races sustain different degrees of loss? Is it beyond the control of a people to alter their ratio in this regard? Does climate exercise any influence on the ratio of destruction from fire? Have the products of the soil in different parts of the globe different affinities for combustion? Has fire any necessary function as a purifier of our cities and towns? That it has so operated in many cases, and did so operate in 1666, in preparing our great city to be the capital of the mercantile world, is clear beyond a doubt.

These are but some of the many considerations which flash before the mental vision in the contemplation of fires and fire insurance. I commend them, such as they are, to the members of this Society, and more especially to those of them who take part or interest in the International Statistical Congresses from time to time held in Europe.

Discussion *on* Mr. Cornelius Walford's Paper.

Mr. R. B. Martin said he really had not many comments to make on a paper so exhaustive and so interesting. With regard to some of the more interesting questions of the archæology of insurances, he would mention that in the year 1704 large badges were worn upon the arm, one of their uses being to exempt the men who wore them from the press-gang. There were some curious traditional facts in his office in the early stage of fire insurances. They were not effected for any particular sum; but a body of gentlemen met together and mutually insured each other, and if there was a fire they subscribed just as much as was wanted to cover the loss. But that did not last over many years. He thought that an inquiry into fires of the nature of a coroner's inquest was a point of the greatest importance. He was under the impression that there was legislation about it, but he did not know how much was done in that way. Whatever the action of the insurance companies might be, it did not affect the political or economical view that every fire destroyed a vast amount of property. He was extremely gratified by the excellent paper that had been read, and he hoped some person would supplement what the author of the paper had read and point out any deficiency in it; but he did not think there was any deficiency.

The Hon. H. S. Washburn expressed the very great pleasure he had had in listening to so elaborate and excellent a paper, and thought that such statistics must be of immense value to those who were interested in insurance matters, as well as to the community at large. He came from a city—the city of Boston—that had had some sad experience in the matter of fires, in regard to which they were now endeavouring to improve. Efforts were now being made in the various States to get at the causes of fire and the means of their prevention; and all that related to the subject of fire insurance would be interesting to the people of the United States. This interest had grown, for the reason that there had been such awful fires within the last decade. He was not particularly connected with any fire insurance company, but he had taken a great deal of interest incidentally in looking to the matter of fires in his own city since the great fire a few years ago, and he had to state that the fire department was at present certainly very efficient. He had the honour to be one of a committee two years ago to visit the engine stations to ascertain the time between an alarm of fire being given and the time the engines were on their way to the fire. He thought that all money that could be expended in increasing facilities in reaching fires at the earliest possible moment was economy. They had a system of electrical fire alarms running through the city of the most efficient kind. There was a system of these at the city hall in the centre of the city that connected with

all parts of Boston. Boston in its extent was not of course so large as London, but it covered a great many miles. By means of these alarms, in less than a minute, the knowledge of a fire spread all over the city. They communicated with every police station, and an alarm was rung from all the bells, and the engines in the vicinity rushed to the place where the fire was. If the alarm was not sufficient, a second alarm was given in ten minutes, and an additional number of fire engines went to the rescue. The horses were so perfectly trained in the engine houses that they knew their places, and in twenty seconds from the alarm of fire the engine would be rushing out of the door. An arrangement was also made by which the electric spark disengaged the collar of the horses, and they rushed to the engine and took their places, and the whole thing was done in the time mentioned. The people of the city of Boston were determined to grapple with the foe, before he could conquer them. Then there was also an inexhaustible supply of water from the reservoirs, and he did not see how it was possible that there could be ever again any fire such as that which occurred a few years ago. Another thing the Americans were learning from the Old World, was to build houses of a more substantial and incombustible material than hitherto. Boston was entirely unlike Chicago, which was surrounded by a large number of wooden buildings in every direction. This was a great mistake, and these buildings must be got out of the way, or there would be another fire. If, when he returned to America, he was asked what he had learned about fires in London, he would be forced to say that he had been there three months and he had not heard an alarm of fire, nor seen an engine. He had read in the "Times" that there were some fires, but they seemed to be very small ones. He thought that the statistics given by Mr. Walford were of the utmost importance, and he hoped that other statistics would be worked up which would be of equal value on the great subject of fires.

Mr. Bunyon said he had not many remarks to make, as he had no statistics. His belief was that there was no city so well furnished with fire brigades as the city of London. If there was not a large fire brigade, it was so efficient that it was always able to cope with any fires that occurred.

The President said he understood that in the United States there was a duty on slates which prevented their being generally used. One of the reasons why there were not so many fires on the tops of the houses in this country was because slates were used, and it was rather difficult for the fire to run on.

Dr. Guy said the paper was to him extremely interesting, and he was much gratified with the remarks made by Mr. Washburn. He (Dr. Guy) held it to be of extreme importance to bring prevention to bear on fires as much as possible. He thought that fireproof construction was a matter that should be carefully considered. His friend, the late Mr. Bellamy, had published a small work which was worthy of more attention than it seemed to have received, in

which he pointed out that in the case of large fires, especially in large warehouses, the great difficulty was that the ironwork itself melted to a certain extent and gave way, and the fabric tumbled down in consequence. He adopted the simple plan of erecting all his pillars hollow, with slits at intervals. He then poured concrete into them, which issued through the slits, and he then completed the pillars with cement. No fire could create such heat as to penetrate into these and soften the iron so much as to cause it to tumble down upon the heads of those who were unfortunate enough to be under it. He was much struck at the time with this plan, and was sorry to think it had attracted so little attention. He hoped that by mentioning it some practical man present would think it worth while to inquire a little further into the means whereby buildings could be made fire-proof.

Mr. Lumley, Q.C., called attention to the arrangements that had been made by the legislature in recent years, by requiring the local authorities to make bye-laws which provided for the erection of buildings in such a way as to provide for special protection against fires. One of the provisions of the Local Government Act of 1868, was for the express intention that the local board should take care that the buildings were erected in such a manner that fire should, to as great an extent as possible, be prevented. He hoped that regulations were now being made which would have a very good effect in future, by having the buildings erected in a safer and more substantial manner. He thought it would be desirable to know that this had been really a subject of attention with the government for the last twenty-five years.

Dr. Farr said he should like to ask Mr. Walford whether he had considered another system under which the water itself did the duty which horses and men performed in Boston. In some cities the water in the supply pipes was at high pressure, and the instant hydrants were applied, was hurled in masses on the flames. He wanted to know if Mr. Walford could mention the effect of that system on life as well as property. According to Mr. Chadwick, there had been a great saving of property where that system had been in operation. One reason why hydrants were not used in London was, it was true, because the water was not at high pressure, but what he wanted to know was, why it was not at high pressure in London? He could not sit down without bearing his testimony to the admirable industry of Mr. Walford. The paper was most elaborate, and they, as a statistical society, must express the deep interest they all felt in the success of the great cyclopædic work on "Insurance" on which Mr. Walford had for some years been engaged, and where every other subject connected with insurance was treated with equal ability and comprehensiveness.

Captain Craigie, speaking of the proposed fire inquests said, that one strong objection to them was that they would throw the cost of inquiry upon a particular tax which was not properly qualified to bear it. The reader of the paper had said truly that every fire

destroyed a great portion of the movable wealth of the community; but it was just the movable wealth of the community that did not contribute in any way to that local taxation which was to defray this new charge. In America some attempt was made to reach locally that wealth which was, after all, the main sufferer; but until there was some mode of re-adjusting our local taxation, he thought there was a great difficulty in adding to the functions of the local authorities. He agreed that the proper duties of the local authority would seem to lie in the direction of preventative measures, in providing for a full supply of water and proper building regulations. This was met by a charge falling chiefly on the houses, a more equitable rate. But with regard to the new functions with which the local authorities were proposed to be invested, the right of objecting to a charge even for a good object must be maintained, so long as the incidence of that charge was unfair.

Mr. E. Hepple Hall said he had been in the service (United States) and had run to many a fire. Mr. Walford had thrown out one or two suggestive and useful hints in regard to what might be learned from foreign countries, and had cited Russia and China, apart from the United States, as being especially prominent in that direction. There could be no doubt if we were to take any lessons at all from our foreign neighbours, they must come from the United States. With regard to the hydrants, he happened to be in Cincinnati when one of the large fires was under way, and it was rapidly subdued, almost wholly by these hydrants. In most of the large and many of the small American cities, these hydrants were to be met with in every street and almost in every block. The way in which the hose is attached and the rapid play which is directed to the building, and the prompt movements of the fire brigade in the metropolitan service, was largely predominant in the States, and the chances were that the fire was extinguished with very trifling loss or one scarcely worth mentioning. In regard to China, Mr. Walford had paid a very handsome tribute to that country in regard to her fires. Much could not be learned from China, but certainly the Chinese had a method of supervising fires which never occurred to us in this country with all its civilisation, and that was with regard to their methods of signalling. In almost every Chinese city there was a signal tower, and in these were stationed men who used signals of a primitive kind. They telegraphed by means of their hands and flags or banners, thus raising the alarm and summoning the firemen to the scene in a most marvellous way.

Mr. Hammick called attention to a point that had not been touched upon. He alluded to fires which were the result of fraud, which was practised upon the insurance offices, and he should like to know the proportion per cent. of fires in London and England that resulted from clear fraud. Probably if there were no fire insurance offices at all there would be much fewer fires in this country.

Mr. Bourne said that whilst expressing his sense of the high importance of the paper that had been read, he rose for the purpose of referring to the author's despair of a bureau of statistics being organised. He did not think there would be much difficulty in a country where such an amount of attention was paid to these subjects. The statistics wanted a great deal of the completeness that would be given to them by the consolidation of the whole under one central authority. It would be very important to have the statistics of crime and fire insurance brought under the eye of one board. He thought the detection of the fraud would be very much facilitated, if the characters of the individuals and their localities were placed in juxtaposition with relation to fire. If the character of the buildings in which the things were stored, the degree of supervision which was exercised over them, and a variety of other particulars in connection with fire insurance were known, it would often be of great assistance to the revenue officers. There was no reason why the adoption of such a system should be despaired of, and he would impress upon the Society to take up as a very important point to be urged upon the Government, that there should be more uniformity in the statistics under a more central authority. However remote many subjects might at first sight appear, it was strange how one threw light upon another.

The Rev. Mr. Doxsey referred to the difficulty there was sometimes of obtaining water in cases of fire, and thought that if the fire brigade and the police had control over the supply of the water more fires would be extinguished.

Professor Jevons said in reference to Dr. Farr's question as to why there were no hydrants in London, that he must have forgotten that Manchester was in the neighbourhood of very considerable elevations, and the reservoirs were such that the water ran down by gravitation. In London the supply of water was mainly drawn from the Thames or low lying sources. Of course he did not deny that there were hills in the neighbourhood of London which might be used for the reservoirs, but the water would have to be pumped up, which would be a very costly thing. What was possible in one town was not equally possible in another.

Mr. White thought that if there was an inquiry by the coroner, who had a movable court, the number of fires would be lessened. It seemed to him rather singular that so large fires occurred as those at Messrs. Grant's, Clerkenwell, Brooks's Wharf, and the City Flour Mills, considering the buildings were fire-proof. He thought they were so high that the water could not be thrown up to them, and he thought that stages should be formed to attack such buildings from the outside. He could not help thinking that the threshing machine was a very prolific source of fires in farms; and he thought that if the machine had a spark-catcher, the number of fires would be lessened.

Mr. Walford, in reply, thanked the meeting for the kind reception his paper had met with. With regard to Mr. Martin's remarks

as to the functions of the early watermen, these men did secure exemption from the press gangs, had other privileges, and performed their duties very well; but with regard to the general impression that some small mutual insurance societies were formed after the fire of London, that was simply a popular delusion. He had looked at newspapers from the time of the fire of London to the reign of Queen Anne, and read the advertisements, and he was prepared to say that although there were several contribution offices founded, they in every case granted a policy for a particular sum. Their plan of operation was to require a premium for the sum insured upon, and a collection was made when the fire occurred. Those who were acquainted with the newspaper advertisements of the period, would see that the policy holders were requested when a fire occurred to come and pay their contributions before a particular day; and this was the only system that could be adopted at the time. There was an Act against monopolies, which hindered the formation of properly constituted insurance companies. No such company could be founded without the authority of a Royal Charter, and to apply for such a charter was unfortunately construed, by the Government of that day, into something like an invitation for the perpetration of a wholesale robbery. He could confirm some of Mr. Washburn's remarks with regard to Boston. In every community the measures for fire protection were more or less adapted to the circumstances of that community. While in America there was the largest provision for fire, still there was nothing approaching the completeness that was required. Unless the brigade arrived early at the larger buildings there was no chance of the fire being extinguished. With regard to London he was sorry to differ from Mr. Bunyon, who was so great an authority on the subject: but if Mr. Bunyon had seen the effective measure taken in America he would no doubt be inclined to change his opinion. Dr. Guy had thrown light on the subject on which he spoke. There was an important fact for which they were indebted to Dr. Guy. He had said that for every thousand criminal lunatics that were taken charge of by the Government so many of them were incendiaries. This showed how much the argument in favour of taking care of the criminal classes applied even to this subject. Mr. Lumley had drawn attention to the Local Government Act. He (Mr. Walford) had referred to several local Acts, empowering as they did the local authorities to pay attention to water supply and to buildings and to provide fire brigades. It was a long time before this was done; but within the last twenty years there was no doubt that protective measures had been taken by many local towns which much required protection. Dr. Farr had referred to the system of hydrants. The paper had referred to the system of hydrants in London, and that was the same that prevailed in the American cities generally. He agreed with what Professor Jevons had said in reference to the hydrant system, which was the perfection of all fire extinguishing when it could be introduced. He wanted to know why a constant supply of water had not yet been given. There was a Bill introduced into the House of Commons, and the water companies had undertaken to serve London with a continuous

supply of water; but this, for reasons which no one could understand, had not been adopted. He observed some honourable members of the House of Commons present, and when the Bill came before the committee he hoped Dr. Guy would obtain an answer to his question—why water companies had not performed the duties they had undertaken? He agreed with Captain Craigie that to throw the expense of fire inquests on certain sections of persons would be an unfair thing; and as it was the duty of the Government to protect the community against robbers and thieves, so it was their duty to give protection against fire, and the time was not far distant when it would have to undertake this duty. Mr. Hall, who had a large experience of the world, and had written a handbook of the globe, had made some very useful and interesting remarks as to the hydrant question. In American cities where there was not the advantage of a natural flow of water from a high elevation, a system was introduced by which the steam engines accelerated the passage of water through the pipes. The moment the fire began the engine went to work and kept the hydrants supplied with three or four or five times more pressure than they would otherwise obtain. That was a mechanical appliance that might well be used in London. Mr. Hall had spoken of the voluntary system in America, but in that country volunteer fire brigades were often partisan or political institutions which had been done away with, and the voluntary system was now a matter of history. In regard to the remarks made by Mr. Hammick in reference to frauds, he would say that unless there was a system of inquiry of some form or other into the cause of every fire, fires would never be put down. Mr. Bourne had made some valuable remarks in reference to statistics. When the statistics were collected in the different departments they were of no use, because they differed in their standard and relationship, but if they were made on a common base they would be of some service. Mr. Doxsey had spoken of fire plugs, which in London were very effective as far as they went, but there was the question of water supply, which was as necessary in regard to fires as it was on grounds of health. Mr. White, of the County Fire, had had a large experience in regard to fires of a certain class, and he would find in the paper some very curious statistics in regard to incendiary fires which were given in the evidence of Mr. Fletcher. With regard to the subject of fire telegraphs, a paper would be read before the Society of Telegraph Engineers on the 28th of this month, on the different systems of telegraph fire alarms in America, and that subject would be fully discussed there. It might be fairly put, as an abstract question, whether fire insurance had done more good than harm, and therefore whether the country would have been better without it; but knowing how much the fire offices had done in the absence of the municipal authorities taking up fire protection, he felt a delicacy in throwing even a doubt upon the use of fire offices. The cost of fire insurance came out of the pockets of the people, and was a charge on their property, and if they chose to spend so much money on fire protection every year, they did so with the hope and belief that their fire premiums on the insurance of property would

be much less, and that was the fact. It would be a good thing in London if there was a central authority who would see that fire protection was sufficiently carried out, and who would consult with the insurance companies on this question. No doubt, as Mr. Doxsey had said, the fire engines waiting for the watermen was a nuisance. The mains were the property of the water companies, who, however, supplied water for extinguishing the fires without any charge at all; but they demanded the right of not having the plugs turned on without their sanction. The sooner that system was abolished the better; and if the hydrants were provided, all the people would have to do would be to turn on the water and the first step would be accomplished. There were many other subjects arising out of this question which he should have been glad to discuss if time had permitted. At the present moment it was not known how it was that ice houses were so frequently struck by lightning. Those that were acquainted with the United States and Canada, would know that such risks were the very worst. It was also a fact that very few deaths from lightning took place on chalk formations. These were questions that might have been discussed, but he was obliged to defer them on the present occasion. He hoped, however, to have the pleasure of speaking on them on some future occasion.

The Populations *of* Russia *and* Turkey.

By E. G. Ravenstein, Esq., F.R.G.S., *&c.*

[Read before the Statistical Society, 19th June, 1877.]

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Area and population, the land and its inhabitants, constitute the chief factors in estimating the relative strength and future prospects of States. Looking to the present political constellation, and to the fact that statistical information on Russia and Turkey is not as readily accessible as in the case of more civilised countries, a paper dealing with their populations may prove acceptable to the Fellows of the Statistical Society. I need hardly say that I have not allowed any sympathy I may entertain for one of the two parties engaged in the present struggle to exercise the least influence upon the figures I propose to lay before you, my only object having been to ascertain the truth. I ought to state at the very outset that our information with respect to the populations of the two empires under consideration is far from being complete. Periodical numberings of the people take place, both in Russia and Turkey, but these are not conducted with the care to which we are accustomed in western Europe. The Russian returns, however, are entitled to some confidence. They are prepared at frequent intervals by local authorities acting under the instructions of a well-organised statistical bureau entrusted with their publication. The figures obtained in this manner may not be absolutely correct, but there is no reason to doubt that they approximate the truth, and I have not hesitated to retain them as published in the "Statistical Year Book "of the Russian Empire." In Turkey the case is very different. The data collected by the local authorities and occasionally published in the Salmanes, or official almanacs of the vilayets, are not deserving of much confidence, and there exists no properly organised statistical office to check the returns. One of the very first suggestions made in the Turkish Parliament referred to the taking of a careful census, and the member by whom this question was brought forward referred to his own district in proof

of the little reliance that could be placed upon the present returns. Professor Yakshich, of Belgrad; M. Kutschera, the Austrian Consul at Rustchuk; M. Sax, Major Zur Helle, and others, have recently devoted special attention to Turkish population statistics.* I have conscientiously consulted the papers published by these authorities, and wherever additional information was procurable, from consular reports or otherwise, I have availed myself of it. The areas of the vilayets of Turkey and of Servia have been computed by me from trustworthy maps. The main results arrived at are as follows:—

	Area: Square Miles.	Population.
Russian empire	8,362,596	86,727,886
Turkey in Europe and Asia	882,273	25,986,868
Turkish empire, including Egypt, Tripoli, and Tunis, but not Romania or Servia	2,140,763	43,408,868
Romania	46,798	4,850,000
Servia	14,490	1,352,522
Montenegro	1,700	196,000

I.—*Nationalities.*

The following table shows the numerical strength of the various races of the two empires, the African possessions of Turkey being excluded:—

Race.	Russian Empire (Estimated for 1870).		Turkey in Europe and Asia.		Romania, Servia, and Montenegro.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
Slav	62,962,000	72·6	3,862,550	14·9	1,471,022	23·0
Lithuanian	2,558,000	3·0	—	—	—	—
Germanic	1,310,000	1·5	—	—	—	—
Greco-Latin	752,000	0·8	5,624,068	17·8	4,390,000	68·8
Other Europeans	—	—	51,500	0·2	11,000	0·2
Iranian	1,667,000	2·0	2,485,700	9·6	8,000	0·1
Indian	21,000	—	171,750	0·7	208,000	3·2
Semitic	2,827,000	3·2	5,567,300	21·5	251,800	4·0
Iberian	1,801,000	2·1	428,000	1·7	—	—
Fin	4,370,000	5·0	—	—	45,000	0·7
Tatar (Turk)	7,937,000	9·2	8,743,000	33·6	1,300	—
Mongol	493,000	1·6	—	—	—	—
Hyperborean	30,000	—	—	—	—	—
Negro	—	—	55,000	0·2	—	—
Total	86,728,000	100·0	25,986,868	100·0	6,385,822	100·0

* The principal results are to be found in that valuable annual supplement to Petermann's "Mittheilungen" entitled "Die Bevoelkerung der Erde," prepared by Drs. Wagner and Behm.

We learn from this table that 72·6 per cent. of the population of the Russian empire are Slavs, whilst the Turk, in the empire to which he has given a name, constitutes hardly more than one-third of the population. This difference in the numerical proportions of the two dominant races is rendered still more important by the fact that the Russ is not only numerically but also, in most instances, intellectually the superior of the races over whom he governs, whilst the Turk is not only outnumbered in the greater portion of his empire, but is also intellectually the inferior of many of the races over whom he rules.

Looking at an ethnographical map of the Russian empire, it will be seen that the Russ occupies in a compact mass nearly the whole of European Russia, that he has spread to the foot of the Caucasus and even beyond that mountain range, and stretches in a broad belt right across Southern Siberia and to the shores of the Pacific. In forty-two out of the fifty governments of European Russia he is absolutely in the majority, in three others (Kazan, Ufa, and Vilna) he is relatively so, and at one point he even extends beyond the frontiers of the empire into Austria, where 3 millions of Russians occupy western Galicia and a portion of Hungary. There are, however, five governments, in addition to Poland and Finland, where the Russ is in a minority, and these, for the most part, lie on the frontier and are therefore vulnerable points. In Kurland and Livland it is the Lett, in Estland the Est, in Kovno the Lithuanian, and in Bessarabia the Romanian, who forms the majority of the population.

Finland is almost exclusively in the occupation of Karelian Fins and Swedes, who not only differ from the Russians in race but also, being Protestants, in religion, and who still look to Sweden, from which they were torn in 1812, as their intellectual home.

Poland, in spite of repressive measures, retains its nationality and religion, and patriotic Poles have not yet surrendered every hope of restoring its independence, and of embracing their 4,876,000 kinsmen in Prussia and Austria within a common political bond. In Poland the Poles number nearly four millions, in Russia nearly 900,000 souls, and they are most numerous in the western governments, which formerly belonged to Poland, and where the land was divided amongst the conquerors, and the Russian population reduced to a condition of serfdom. Intellectually, the Poles, next to Germans and Swedes, hold the foremost rank in the Russian empire, and much of the scientific work with which the Russians are credited, has been performed by them.*

* Proportion of scholars to inhabitants: in the German Baltic Provinces 1:18; in Finland, 1:21; in Poland, 1:34; in the remainder of European Russia, 1:98.

The Germans are not very strong numerically, and even in the so-called German provinces on the Baltic they are far less numerous than the Letts, Livs, and Ests, whom their forefathers subjected to an iron rule, but from their superior education they occupy a position far more prominent than their numbers would warrant. They have proved themselves the apostles of western civilisation in Russia, and whatever envy may say, Russia is greatly indebted to them in many respects.

The Lithuanians, with the Shmudes, were a powerful people formerly, and wrested province after province from their Russian neighbours. In 1386 Lithuania was united with Poland, and its inhabitants were reduced to a state of vassalage, from which the Russians released them. They are for the most part Roman Catholics, but many have recently been converted to the Greek Church. They form the majority of the population of the Government of Kovno. Their kinsmen, the Letts, who are most numerous in Kurland, Livonia, and Vitebsk, having been subjected to German influence, are Protestants.

Turning to the south-western frontier of the empire, we meet another alien race, the Romanians of Bessarabia, about 655,000 strong, whose kinsmen have succeeded in establishing a quasi-independent state on the other side of the Pruth. The Romanian nation numbers more than 8,000,000* individuals; it, too, has its national aspirations, and merely looks upon the present principality of Romania as the nucleus of a future state of more ample dimensions.

In Siberia the Russian is well able to hold his own, for the feeble tribes which roam over its thousands of square miles, do not dream of resisting his rule, but in the south-eastern portion of European Russia, in the Caucasus and more especially in central Asia, the foreign element is formidable in numbers, and in most cases inimical to Russian rule, which can be maintained only by force of arms. The foremost rank amongst these Asiatic tribes must be accorded to the Tatars, including Tatars proper, Turks, Kirgiz, and others. Independently of the Yakutes of Eastern Siberia, who are Shamanists, and separated geographically from their kinsmen in the west, these tribes number 7,937,000 souls—4,678,000 in Asia, 3,259,000 in Europe—and to these should be added about a million Bashkirs and other Tatarised Fins. These various tribes occupy nearly the whole of central Asia, so called, where, up to the time of the Russian occupation, they were the dominant race; they have spread to the north of the Caspian,

* Romanians in Romania, 4,224,700; in Hungary and Austria, 2,797,700; in Russia, 565,000; in Servia, 160,000; in Turkey, 189,200; total 8,036,600.

extend in detached patches to the neighbourhood of Kazan, hold a considerable portion of Caucasia, and occupy the Crimea as their most westerly outpost. They are Mohammedans almost without an exception, and in case of a war in which religious passions are engaged, they would embarrass the Government to which they owe allegiance. Some amongst them, such as the Turkomans and Burut or Black Kirgiz, are even now at open war with their conquerors. The regions occupied by these Tatars are of vast extent, they are very thinly peopled, and by establishing Russian colonies within them the hostile elements might easily be neutralised.

The Iranians—Tajiks or Sarts—of central Asia, though Mohammedans, may be looked upon as a friendly element of the population, and the same may be said of the Christian Georgians and Armenians of Caucasia. But neither of these are warlike races. They look to Russia for protection, and add but little to the military strength of the empire.

The Hill tribes of the Caucasus are likewise a hostile element. Forced to submit after a prolonged struggle, many of them, rather than acknowledge themselves the subjects of the Tsar, preferred to emigrate, but the old hostile spirit has not died out amongst those who remained behind, and it only needed a spark for it to burst again into a flame. Still, these hill tribes now hardly number 800,000 souls. Russian colonies have been established amongst them, and the severe measures of repression which are certain to be taken in case of an insurrection, must in the end lead to their thorough subjection if not annihilation.

The Mongols living within the limits of the empire are for the most part Shamanists or Bhuddists; some of them have been converted to Christianity, and neither numerically nor in other respects do they constitute a dangerous element of the population. This applies equally to the few Hyperboreans who inhabit the wilds of Siberia.

We have thus seen that although many of the frontier districts are occupied by tribes and nations inimical to Russian rule, the Russians, nevertheless, form the bulk of the population of the whole of the empire, and as they increase at a more rapid rate than the Mohammedan races subject to them, their numerical ascendency must become more pronounced from year to year.

Very different is the position of the Turk in the Turkish empire. Relatively he is the strongest of the races inhabiting the empire to which he has given a name, and his position might therefore be likened to that held by the Germans in the Austrian empire, or by the Magyars in Hungary. But whilst the German has at all times been an element of civilisation, the Turk is the very reverse of this. Greeks and Armenians are his superiors in education, and to the

least scrupulous of these nations devolves, in a great measure, the conduct of government, from which Turk and Christian, Raja and Mussulman, suffer equally.

Nor is the Turk equally distributed over the empire. If the dominant race formed one-third of the population of each sanjak, its prestige would attract to it the more ambitious amongst the subject populations. Such was the case when the Hellenic conquerors of Greece absorbed the more highly civilised Pelasgians, whom they found dwelling there, and whom they treated by no means more mercifully than the Christians and others have been treated by their Turkish conquerors. The true home of the Turk is Asia Minor, where he constitutes 80 per cent. of the population. Numbers give him an influence there which he lacks in other portions of the empire. Even the Greek in the inland towns has forsaken the sonorous language of his ancestors, in order to adopt that of his new masters, and in Northern Armenia the Turkish language is gradually supplanting that of the Georgian Lazi.

In Europe, Turkish agriculturists and herdsmen occupy extensive districts, and Turks are met with in many of the towns; but irrespective of Constantinople, there are but three sanjaks in which they are a majority of the population. These are Tulcha and Varna, comprehended in our tables under the name of Dobruja and Drama.

Amongst the Non-Turkish races of European Turkey the Bulgarians are numerically the strongest. They are Fins by blood, but Slavs by language, frugal and industrious, possessed of much mechanical skill, but averse to war—very unlike their neighbours, the Servians. Those amongst them who have become Mohammedans are known as "Pomaks," *i.e.*, "helpers," but Kanitz thinks that certain events might induce them to return to Christianity. In Eastern Bulgaria, where there is a numerous Turkish population, they are bilingual. The Bulgarians are a majority, absolute or relative, in the sanjaks of Adrianople, Philippople, Sofia, Sliven, Rustchuk, Turnov, Vidin, Nish, Uskub, and Monastir, and these have been included in the tables appended to this paper under the name of Bulgaria. The Bulgarians, perhaps on account of their submissive, gentle nature, have been more exposed to extortion on the part of Greek and Armenian farmers of taxes, and to a violation of the sanctity of their homes by Turkish landowners, than any other race in Turkey. Promises to ameliorate their condition have remained dead letters, and the honest efforts made during Midhat Pasha's short reign in Bulgaria have not been followed up.

The Servians, including Rascians, Bosnians, and Croats, are the western neighbours of the Bulgarians. They occupy nearly the whole of Bosnia and the Herzegovina, together with Servia and

Montenegro, as well as extensive territories in Austro-Hungary. They number altogether 5,420,322 souls,—1,272,000 in Turkey, 1,022,022 in Servia, 196,000 in Montenegro, and 2,930,300 in Austro-Hungary. The dialects spoken by the Servians differ only slightly, but the nation is divided by religious differences. In Bosnia and the Herzegovina the upper classes have become Mussulmans, and of the remainder a good many have joined the Church of Rome. In the principality they belong to the Greek Church, whilst the Austro-Hungarians owe a divided allegiance to Rome and Greece.

In former times the Servians extended much further to the south, but they evacuated extensive districts in order to escape the yoke of the Turks, and their places have been occupied by the third great people of the Balkan peninsula, the Albanians or Skipetars, who are the descendants of the ancient Pelasgians, and speak a language akin to that of the Greeks. Most of the two millions of Albanians have embraced Islam, but many Christians, Roman Catholics as well as Greeks, are met with amongst them. They occupy the western portion of Turkey, to the south of Montenegro, and are the majority in the sanjaks of Prisbend, Divra, Korytza, Argyrokastron, Berat, and Scutari. In the south, where they come into contact with the Greeks, they have adopted the Greek language, and it should not be forgotten that the Suliotes, who so greatly distinguished themselves in the war of liberation, were Albanians.

Another people, likewise akin to the Greeks, and apparently not averse to becoming amalgamated with them, are the Zinzares or Southern Romanians, who dwell in the mountains separating the waters of the Ægean from those of the Adriatic, and are esteemed throughout Turkey for their great industry.

The Greeks are the fourth of the leading nations of European Turkey, and in some respects the first. They are a majority in the sanjaks of Rodosto, Gallipoli, Seres, Saloniki, Yanina, Preveza, and Tirkala (Thessaly), and these, together with Drama, which is enclosed by them, and Crete, the population of which is almost purely Greek, we have described in our tables as the Turkey of the Greeks. In Asia the Greek element is dominant on all the islands, and very powerful in the vilayet of Smyrna. Altogether 2,512,000 Greeks live within the limits of the Turkish empire (of whom 1,047,000 are in Asia), whilst their number in the kingdom of Greece only amounts to 1,400,000—a strange anomaly. Whatever may be thought of the moral character of the Greeks, there can be no doubt of their intellectual superiority over the peoples among whom their lot is cast, and none will accuse them of not making the most of the advantages which result from superior education.

The other nationalities represented in European Turkey are numerically weak and politically of very little importance. Nearly 100,000 Circassians have been settled in various parts of the country. In the Dobruja we meet with colonies of Russians, who sought a refuge there in the reign of Catherine II, as well as with a colony of Arabs. The Romanians on the Lower Danube are important only because the other bank of the river is occupied by their kinsmen of the principality. Armenians are met with only in the larger towns. Gipsies are found in nearly every sanjak. In some parts, as in Bosnia, they are nomads, but elsewhere they have settled down as tillers of the soil, and have become really useful members of society. Jews are not particularly numerous in Turkey. They are for the most part the descendants of Spanish Jews, who sought a refuge in Turkey during the reign of Ferdinand and Isabella. The Polish Jews, who talk a German jargon, are confined almost to Romania, where they constitute 5·2 per cent. of the population.

Far less complicated than the ethnological features of European Turkey are those of the Asiatic portion of the empire, which may be divided into four great divisions, assignable to Greeks, Turks, Kurds (with Armenians) and Arabs. We have already seen that the Greeks hold the islands with portions of the neighbouring main land, whilst the Turks are undisputed masters in Asia Minor. Armenia and Kurdistan have a very mixed population. The Turks are strong there, stronger than the Armenians, many of whom have emigrated to Russian Armenia, but stronger than both together are the Kurds, a warlike people, impatient of the rule of the Turks, whom, being Sunnites, they hate even more than they do the Christians. The fourth great division is occupied by an agglomeration of peoples, possessing a bond of union in a common language, and in the majority of cases also in the Mohammedan religion. Kurds dwell in the hills to the east of the Tigris, as well as Turkmen, but it is the Arab who has impressed his stamp upon this region, which we have called Arabistan in our tables.

II.—*Religions.*

In comparatively uncivilised countries religion constitutes perhaps a closer bond of union than nationality, more especially when the religion held by the majority is threatened from without. Religious passions undoubtedly influence the thoughts and deeds of Russ and Turk to a large extent, and a few notes on the numerical strength of the adherents of various religions in the two empires are therefore essential to a paper dealing with their populations. The leading facts are as follows:—

	Russia.		Turkey.		Romania, Servia, and Montenegro.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
Christians	74,383,405	85·7	8,047,968	31·0	6,132,522	96·0
Mohammedans	8,971,643	10·4	17,519,350	67·4	1,800	—
Jews	2,798,252	3·2	184,800	0·7	251,500	4·0
Heathens	574,386	0·7	233,750	0·9	—	—
Total	86,727,886	100·0	25,986,864	100·0	6,385,822	100·0

In Russia the bulk of the population belongs to the Greek church, which enjoys a vast majority in Europe and Siberia, but embraces less than half the population of Caucasia, and is hardly represented at all in Central Asia. Nearly all the Russians belong to it, as also the Romanians, the Georgians of Caucasia, and many of the Fins, and other tribes in Siberia. Schism has at all times been rife in Russia, though indulgence has not hitherto been extended very liberally to schismatics. The Russians, who about 1649 acknowledged the Pope in Rome as their head, were forced back to the orthodox church in 1839, those settled in Poland alone excepted, who remain United Greeks to the present day, whilst other schismatics were exiled to Siberia or settled in other remote parts of the empire.

That the orthodox Greeks are a proselyting church may be seen from the numbers of Roman Catholics. The stronghold of the Roman Catholics is amongst the Poles, the Lithuanians and Shmudes, but whilst the former are not easily turned away from their faith, the latter are more ready to listen to the advantages held out in case of their conversion. That the "persuasions" of Russian priests and Government officials have not been without effect is shown by the slow increase or even decrease of the Roman Catholic population of Russia. In 1853 there were 2,806,700 Catholics; in 1867, 2,882,991; and in 1870, 2,897,560; and the increase amongst them has consequently been at a very much lower rate than among the population generally.

Protestantism obtains in Finland and in the German Baltic provinces. The Armenian Church is most numerously represented in Caucasia.

The Jews constitute an important element of the population, more especially in Poland, Western and Little Russia, where there are districts in which they can boast of a majority. They first came to Poland at the time of the Crusades, and spread thence over the adjoining provinces of Russia. They increase much more

rapidly than the people amongst whom they live, and attempts to convert them have failed in Russia as everywhere else.

The Mohammedans constitute 10·4 per cent. of the total population of the empire. They are a majority in the Government of Ufa, and strongly represented in Kazan, Orenburg, Samara, Astrakhan, Taurida, Perm, and Viatka. Nearly the whole of Eastern Caucasia is Mohammedan, and in Central Asia Islam prevails almost to the exclusion of every other form of religion.

The Calmucks of European Russia are Bhuddists, but most of the other heathens of Russia are Shamans, whose superstitions prevail also amongst many of the tribes who have embraced Christianity.

Russia certainly presents a picture of the most diverse forms of religious belief. There are Christians of the three great churches, Greek, Roman, and Protestant; Christian dissenters belonging to at least two hundred different sects, Mohammedan Sunnits and Shiits, Jews, Bhuddists, and Shamanists. But if we exclude certain frontier provinces, the great bulk of the people is found to adhere to the orthodox national church. In Turkey the circumstances are far less favourable. Certainly 68 per cent. of the population are Mohammedans, but they belong to a great variety of races, and are very unequally distributed over the empire. This is more especially the case in Europe. Only in twelve sanjaks out of a total of thirty-four are the Mohammedans in a majority. In Constantinople, Tulcha, Varna, and Drama, this majority consists of Turks or Tatars. In Rustchuk it is made up by Circassians and renegade Bulgarians, and in the remaining sanjaks there are hardly any Turks at all, the Mohammedans of Pristina, Divra, and Berat being Albanians for the most part, and those of the Bosnian sanjaks Servians. Far more satisfactory is the position of the Mohammedans in Asia, where they are in a great majority everywhere except on the islands, which belong to the Greeks. It should not, however, escape notice that the Kurds are Sunnites, and that there exist four Mohammedan sects in Syria, Druses, Nazairiyeh, Ismailieh, and Metawileh.

The divisions amongst the Christian inhabitants of the Turkish empire, however, are far more profound than those existing amongst the Mohammedans, and must prove an effectual bar to any co-operation between them quite irrespective of differences of nationality. The Armenians are too widely dispersed, and even in Armenia, their stronghold, they are too small in numbers, to enable them to act as a united body. Not so the Roman Catholics. These have not only induced several of the Eastern Christians in Asia to acknowledge the Pope as their head, but have also secured a footing amongst Bosnians and Albanians, and are endeavouring to gain

over to their side the Bulgarians. As to the "Greeks" so called, they no longer universally acknowledge the patriarch of Constantinople as their supreme head. The Romanians and Servians have long ago established national churches of their own, and the Bulgarians, driven thereto by the rapacity and misconduct of the Greek bishops and priests supplied them from Constantinople, have done so likewise as recently as 1860. This split in the church sufficiently accounts for the active support extended in the existing crisis by the Greek patriarch to the Turks. Religious rancour and national antipathies to the Slavs, which are of old standing, sufficiently account for his conduct.

III.—*Density of the Population.*

The countries under notice are very thinly inhabited. In European Russia, exclusive of Poland, there are only five governments (Moscow, Podolia, Kief, Kursk, and Pultova) having more than 100 inhabitants to a square mile, and even in Poland their number does not exceed 123, which is far inferior to what we meet with in the adjoining provinces of Austria. On an average there are 36 inhabitants to a square mile in European Russia, 29 in the Caucasus, 3 in Central Asia, and only 0·7 in Siberia; the average for the whole empire amounting to 10. In a large measure this sparseness of the population can be accounted for by the inhospitable nature of a large portion of the country. Vast regions of the empire lie within the Arctic circle, and these must for ever remain the home of trappers and reindeer nomads; there are extensive desert tracts in Asia and even in Europe, which defy every attempt at cultivation. But on the other hand it cannot be doubted for a moment that the present population of Russia falls short, by far, of what that country is able to support. There still remain immense tracts which are capable of cultivation, and even the steppes might in course of time be converted into a productive agricultural region. The successes achieved there, by German colonists, in the planting of trees, ought to encourage further efforts in the same direction, and the labours of colonists would no doubt prove equally remunerative with those of the American settlers who are rapidly converting useless prairies into fruitful orchards. Siberia, too, and even central Asia, call for colonists, and however rapidly the population of Russia may increase, there is space within the vast limits of the empire for additional millions. Siberia has to a large extent received the criminal population of the empire, but colonisation, to be successful, must be effected by means of hardy, industrious, and honest settlers. They alone can convert an unprofitable wilderness into a productive district, contributing its share towards the sup-

port of the State, instead of proving a constant drain upon its resources. The political importance of introducing a respectable Russian element into the most remote corners of the empire cannot be over-estimated, and a properly organised system of colonisation would certainly prove more productive than the large sums at present lavished upon military array. Russia is so large and so thinly peopled, some of the frontier tribes are still so inimical to Russian rule, that we can well believe her statesmen are in earnest when they protest against a further extension of her boundaries in certain directions.

The geographical position of Turkey is in every respect more favourable, and the fact that its population is nearly thrice as dense as that of Russia will not therefore cause surprise. Still, in European Turkey the number of inhabitants to a square mile is only 61, which is inferior to what we find in twenty-four out of the fifty Governments into which European Russia is divided, and falls short even more considerably of the population supported on an equal area in Poland or the Austrian empire, not to speak of the vassal states of Romania and Servia. A regenerated Turkey might easily double the number of its inhabitants without fear of over population, and if a density were to be attained such as exists at present in Austria, Turkey would number nearly 24 millions instead of less than 10, as at present. With the exception of the Constantinopolitan district, with 623 inhabitants to a square mile, there is but one sanjak of Turkey the population of which is as dense as in Austria. This is the sanjak of Berat, a small district of Albania facing the Adriatic, and almost exclusively inhabited by Albanians, where there are 160 inhabitants to a square mile. In the Drobuja (Tulcha and Varna) the number is but 37, in Bulgaria 65, in Bosnia 38, in Albania 68, and in what we call the Turkey of the Greeks 57. Only in five sanjaks does the population exceed 100 inhabitants to a square mile.

Turkey in Asia is far less densely peopled than the European portion of the empire, for the number of inhabitants to a square mile only amounts to 23, and even on the islands, where it is densest, it does not exceed 65. That Turkey could support a far larger population than it does at present, and in greater comfort, cannot be doubted. The work of amelioration, pointed out in the case of Russia, would prove equally advantageous in the rival empire. But instead of this, forests are devastated to meet temporary embarrassments, and the State is managed as if it were the estate of a spendthrift owner in the hands of bailiffs, whose only aim is to enrich themselves rapidly without any thought of the future.

IV.—*Sexes.*

In Russia, as in most other parts of Europe, the number of females is larger than that of the males. In 1858 the number of females to every hundred males was 105 in European Russia, and 107 in Poland, but in 1870, 102 in Russia and 105 in Poland. The great excess observed in 1858 is satisfactorily accounted for by the heavy sacrifices in men demanded during the Crimean War. But though a preponderance of the females is the rule if we look at the whole empire, there are large districts of it in which the males are in a decided majority. Such is the case for the whole of Siberia, Central Asia, the Caucasus, and in ten governments of European Russia, amongst which are Moscow and St. Petersburg. Nor is Russia singular in this proportion between the two sexes. In Romania there are only 94·4 females to every 100 males, and in Servia 95. In Austrian Croatia, Slavonia, the coastland and Dalmatia, all of which are inhabited by Slavs, the males preponderate. In Greece only 95 males have been enumerated to every 100 females, and in Italy 99. Belgium with Rhineland and Westphalia are the only other portions of Europe where males are in the majority. That this should be the rule in newly settled countries is only what might be expected, but it is curious to find that amongst the Negroes in the West Indies, and the Kafirs of British Kafraria, the females largely preponderate, whilst the reverse is the case amongst the American Indians, and nearly throughout the whole of British India. Religion, in as far as it influences the social relations between the sexes, may be made to account for this preponderance of the male sex, for it obtains in all those portions of the Russian empire, where Mohammedans constitute a majority of the population. But there are governments of European Russia similarly situated where neither Mohammedans nor heathen are numerous. The question of the preponderance of the male sex appears to me to be deserving of a careful study, based upon materials more trustworthy and elaborate than those obtainable with respect to Eastern Europe. The causes which lead to it are no doubt various.

Where a large immigration of males takes place, as in our European colonies and in Siberia, the males must naturally preponderate.

Where females are looked upon as inferior beings, female infanticide and the sale of female children are rife. An example of this is to be found amongst the mountaineers of the Caucasus.

Where most of the hard work is thrown upon the women, as in nearly every uncivilised country, and, I am sorry to say, in a considerable portion of Europe, the mortality amongst the females

must greatly exceed that of the males, and the latter will again preponderate.

Where females lead a life of seclusion and ease, not conducive to health, as in an Oriental harem, their life will naturally be shortened, and the immoral practices carried on there, and generally speaking amongst most Orientals, must tend to the same result.

The age of marriage may possibly exercise a similar influence, for M. T. Sadler, Hofacker, Boulanger, and others have shown that where the age of the husband much exceeds that of the wife there are 114 boys born to every 100 girls, the usual proportion being 106 to 100.

But whatever the cause, I think we are safe in assuming that in all the Mohammedan countries of Asia, throughout the Turkish empire, and in a considerable portion of Europe, there are more males than females. This is all the more curious as polygamy is an old-established institution in the greater portion of these countries. The number of bachelors or widowers must be exceptionably large there, and it can hardly be doubted that polygamy will disappear as soon as a stop is put to the importation of the female slaves who still find their way to Turkey from many parts of Asia and Africa.

V.—*Movement of the Population.*

The population returns for the Russian empire enable us to determine approximately the increase of its population, but with respect to Turkey, its tributary States excepted, we are still without any materials to guide us.

The population of European Russia, exclusive of Poland and Finland, increased from 52,908,283 souls in 1851 to 65,704,559 in 1870, the average annual increase being 1·16, that between 1851-58 1·1, between 1858-67 only 0·77, and between 1867-70 again 1·1 per cent. This increase was very irregularly distributed over the various portions of the empire. In 1867-70 it was most considerable in the provinces of Southern Russia (nearly 2 per cent.), and least so in the German Baltic Provinces (0·56 per cent.), and in the inhospitable Governments of the extreme north (0·6 per cent.) In three Governments—Olonez, Novgorod, and Podolia—the population actually decreased to the extent of 21,640 in the course of the three years named. The increase of the population is by no means rapid, for we must bear in mind that Russia does not send forth streams of emigrants like the British Islands or Germany. The colonisation of Siberia is evidently carried on very leisurely, for its population only increases at the rate of 0·76 per cent. per annum, nor does the Caucasus appear to absorb a large portion of

the surplus population of European Russia. If we allowed ourselves to be guided by the excess of births over deaths, as registered, the population ought to increase far more rapidly than it does, or emigration on a pretty large scale must be taking place.* But this is evidently not the case, and I am inclined to believe in the existence of some error in the returns.

In Poland the movement of the population appears to have been far less regular than in Russia. In 1835 Poland had a population of 4,059,617 souls, which increased to 4,852,055 in 1851, but fell to 4,764,446 in 1858. For several years afterwards, owing no doubt to revolutionary events, the population increased very slowly, but between the years 1863-67 an increase at the rate of 4·1 per cent. per annum was recorded, which fell to 1·75 per cent. for the years 1867-70. The extraordinary increase between 1863-67 is due, undoubtedly, to an inflow of immigrants, and more especially of Germans, who purchased the estates vacated by their exiled Polish owners, and brought with them the labourers required for their cultivation, whilst the high rate of increase generally is due in a large measure to the fecundity of the Jews, who constitute so important an element of the population of Poland.

In Finland the population has decreased between 1867-70, owing to emigration, but since then it is again on the increase.

We should have liked to apportion the increase of the population throughout Russia according to religion and nationality, but the data at our command scarcely justify our doing so. C. Keleti has shown, in the case of Hungary, that whilst that natural increase amongst Protestants only amounts to 15 per cent., it is 16 per cent. amongst Roman Catholics, 19 amongst orthodox Greeks, but 49 amongst the Jews. We believe that similar proportions exist in Russia. The members of the Greek Church, forming the vast majority of the people, may be assumed to approximate to the general increase observed amongst the entire population; the increase amongst Catholics is rather less; Jews increase twice as fast; but Mohammedans remain almost stationary.

Unfortunately we have no data on the increase of population in Turkey. We know, however, that in Romania there are 33 births and 27 deaths per 1,000 living, and in Servia 45 births and 32 deaths, and if the testimony of travellers can be trusted, the increase amongst the Turks is far less rapid than amongst the Christians. This is partly accounted for by the fact that the former have to bear the whole burden of military service.

* Births per 1,000 living 50, deaths 36, and consequently natural increase of population 1·4 per cent. per annum, instead of 1·1 per cent. as given above.

VI.—*Conclusion.*

The facts which I have presented to you may be summed up as follows.

In the Russian empire, to every 100 Russians, there are 50 members of other nationalities; and to every 100 Christians, 16 Mohammedans and pagans.

In the Turkish empire, on the other hand, every 100 Turks have opposed to them 197 members of other nations, and every 100 Mohammedans, 47 Christians.

The advantage, in both these respects, is therefore entirely on the side of Russia, and the position of Turkey must appear in a still less favourable light if we look at the details of the geographical distribution of the dominant race and religion, and bear in mind the interest existing amongst Slavs not only, but also amongst Greeks with respect to some of the races dwelling within the limits of that empire.

TABLE I.—*Russia and Turkey. Area and Population.*

	Area. Square Statute Miles.	Population, 1870.	Density.	Number of Females to 100 Males.
RUSSIA.				
Great Russia (including St. Petersburg)	353,565	23,759,387	68	102
Northern Russia	504,361	1,580,543	3	108
Baltic provinces	35,982	1,943,991	54	106
Western (White) Russia	162,295	9,822,259	61	101
Little Russia	80,227	7,635,361	95	102
Southern Russia	153,104	5,819,302	38	95
Eastern „	546,487	15,143,716	24	106
Poland	49,158	6,026,421	123	106
Finland (1874)	128,137	1,882,622	15	105
Novaya Zemlya	35,163	—	—	—
Large lakes	10,089	—	—	—
Russia in Europe	2,058,568	73,613,602	36	102
Caucasus	172,740	4,893,000	29	90
Siberia	4,810,048	3,405,084	0·7	93
Large lakes	15,001	—	—	—
Central Asia	1,269,532	4,810,000	3	91
Large lakes	35,807	—	—	—
Russia in Asia	6,304,028	13,114,084	2	91
Russian empire	8,362,596	86,727,686	10	101
TURKEY.				
Constantinople	1,100	685,000	623	—
Dobruja	8,700	318,000	37	—
Bulgaria	56,750	3,681,000	65	—
Bosnia	32,650	1,243,000	38	—
Albania	25,670	1,753,000	68	—
Turkey of the Greeks	33,220	1,881,000	57	—
Army and navy	—	100,000	—	—
Turkey in Europe	158,090	9,661,000	61	—
Islands (Greek)	6,513	421,868	65	—
Asia Minor	198,840	6,993,000	35	—
Kurdistan and Armenia	85,300	2,378,000	28	—
Arabistan	433,530	6,483,000	15	—
Army and navy	—	50,000	—	—
Turkey in Asia	724,183	16,325,868	23	—
Turkey in Europe and Asia	882,273	25,986,868	29	—
Tripoli in Africa	344,400	1,150,000	3·3	—
Egypt	863,380	14,272,000	16	—
Tunis	45,710	2,000,000	44	—
Turkish empire	2,140,763	43,408,868	20	—
Tributary to Turkey: Romania	46,798	4,850,000	104	94·4
Tributary to Turkey: Servia	14,490	1,352,522	93	95
Montenegro	1,700	196,000	115	—

Note.—Turkey has been divided into ten divisions, according to the predominating nationalities. The *Dobrujа* includes the sanjaks of Tulcha and Varna. *Bulgaria* includes the sanjaks of Adrianople, Philippopole, Sofia, Sliven, Rus'chuk, Turnov, Vidin, Nish, Uskub, and Monastir (Bitolia), in all of which the Bulgarians predominate. *Albania* includes Prishtina (with Prisbend), Divra, Korytza, Argyrokastron, Berat and Scutari. *Turkey of the Greeks* includes Rodosto, Gallipoli, Drama, Seres, Saloniki, Thessaly, Yanina, Preveza and Crete. In Asia the vilayets of Erzerum (with Van) and Diarbekr are assigned to *Armenia and Kurdistan*; Aleppo, Syria, Bagdad, el Hasa, Hejaz and Yemen are included under *Arabistan*; Cyprus and Samos are included in the *Island Vilayet*, which politically belongs to Europe, and the remainder is included under *Asia Minor*.

TABLE II.—*Turkey. Details of Area and Population.*

Vilayets or Sanjaks.	Area. Square Statute Miles.	Population.	Density.	Mohammedans.	Mohammedan, per Cent. of Population.	Preponderating Nationality.
Constantinople	1,100	685,000	623	385,000	56	365,000 Turks
Adrianople	6,620	357,000	54	114,000	32	162,000 Bulgarians
Philippople (Felibe)	8,630	512,000	60	187,000	36	303,800 „
Sofia.....	5,530	341,000	62	48,000	14	286,000 „
Sliven	3,960	168,000	42	74,000	44	80,500 „
Rodosto	2,660	99,000	37	36,000	36	53,000 Greeks
Gallipoli	3,710	138,000	37	59,000	43	60,000 „
Adrianople	31,110	1,615,000	52	518,000	32	855,050 Bulgarians
Tulcha.....	4,990	194,000	39	109,000	56	104,000 Turks
Varna	3,710	124,000	34	89,000	72	80,000 „
Ruschuk	7,990	604,000	76	353,000	58	327,000 Bulgarians
Turnov	3,720	382,000	103	150,000	31	265,000 „
Vidin	4,610	385,000	84	70,000	18	322,000 „
Danube	25,020	1,689,000	68	771,000	46	803,000 Bulgarians
Nish (Nissa)	5,110	313,00	61	92,000	30	214,000 Bulgarians
Uskub	3,890	234,000	60	110,000	47	130,000 „
Prisbendi and Prishtina	3,470	389,000	111	281,000	72	310,000 Albanians
Kosova.....	12,470	936,000	75	483,000	52	455,000 Albanians
Saloniki	6,330	163,000	26	70,000	43	59,000 Greeks
Seres	3,770	223,000	59	86,000	39	100,000 „
Drama.....	3,240	112,000	35	94,000	85	60,000 Turks
Monastir (Bitolia).....	6,690	385,000	57	126,000	33	234,000 Bulgarians
Divra	2,510	245,000	98	225,000	92	237,000 Albanians
Korytza	1,910	154,000	74	53,000	35	119,000 „
Saloniki (Selanik)	24,450	1,282,000	53	654,000	51	456,000 Albanians
Yanina	3,120	374,000	121	54,000	14	220,000 Greeks
Preveza (Arta)	1,360	138,000	99	52,000	37	80,000 „
Argyrokastron	2,390	282,000	117	132,000	47	199,000 Albanians
Berat	1,670	283,000	160	218,000	78	271,000 „
Tirkala (Thessaly)	5,710	359,000	63	46,000	13	278,000 Greeks
Yanina	14,250	1,436,000	101	502,000	35	663,000 Greeks
Scutari (Albania)	13,720	400,000	22	176,000	44	387,000 Albanians
Herzegovina	13,680	164,000	12	79,000	48	160,000 Bosnians

TABLE II.—*Turkey. Details of Area and Population—Contd.*

Vilayets or Sanjaks.	Area. Square Statute Miles.	Population.	Density.	Mohammedans.	Mohammedan, per Cent. of Population.	Preponderating Nationality.
Serayevo	3,240	128,000	40	70,000	51	
Zvornik	2,870	248,000	86	127,000	51	
Travnik	3,330	185,000	56	87,000	47	
Novibazar	3,780	168,000	44	105,000	62	
Banyaluka	2,210	180,000	82	60,000	33	
Bihach	3,540	170,000	49	90,000	53	
Bosnia	18,970	1,079,000	57	539,000	50	10,300 Servians
Crete	3,320	275,000	83	40,000	15	270,000 Greeks
Army and navy	—	108,000	—	100,000	—	
Turkey in Europe	158,090	9,661,000	61	4,247,000	44	2,575,000 Bulgarians
Islands	6,300	387,000	61	95,000	25	290,000 Greeks
Samos	213	34,868	165	—	—	34,000 „
Constantinople	5,100	796,000	156	647,000	81	647,000 Turks
Brussa	30,400	1,030,000	34	858,000	80	858,000 „
Smyrna	22,320	1,041,000	48	646,000	62	646,000 „
Kastamuni	19,770	772,000	39	709,000	92	709,000 „
Angora	26,790	514,000	19	461,000	90	461,000 „
Konia	39,120	755,000	19	702,000	93	702,000 „
Adana	14,730	335,000	22	313,000	93	298,000 „
Trebizond	14,370	938,000	67	779,000	83	583,500 „
Sivas	26,240	812,000	31	704,000	87	640,000 „
Erzerum (and Van)	45,750	1,238,000	27	824,000	67	474,000 Kurds
Diarbekr	39,550	1,140,000	29	918,000	81	712,500 „
Aleppo	46,140	880,000	19	733,000	83	532,000 Syrians and Arabs
Syria	35,530	2,250,000	64	1,690,000	75	1,693,000 „
Bagdad	99,970	2,000,000	20	1,880,000	94	1,630,000 „
El Hasa	31,890	218,000	68	218,000	100	218,000 „
Hejaz and Yemen	22,000	1,135,000	5	1,120,000	99	1,030,000 Arabs
Army and navy	—	50,000	—	50,000	—	
Turkey in Asia	724,183	16,325,868	23	13,347,800	82	5,343,000 Arabs

TABLE II *Contd.—Principalities. Servia* (1874).

	Area.	Population.	Density.
Belgrad	813	99,507	122
Alexinatz	663	56,661	85
Valyevo	855	87,784	102
Kniashevatz	529	62,616	118
Kraguyevatz	992	107,817	109
Kraina	1,177	75,988	64
Krushevatz	811	77,103	95
Pordrinye	693	52,506	76
Posharevatz	1,496	159,237	106
Rudnik	649	52,809	81
Smederovo	455	70,529	157
Ushitze	1,545	114,590	76
Tsrareka	727	58,454	80
Chachak	932	63,832	68
Shabatz	717	79,367	110
Tyuprya	764	63,251	83
Yagodina	672	70,471	105
Servia	14,490	1,352,522*	93

Nationalities.		*Religions.*	
Servians	1,022,022	Greek Catholics	1,346,122
Bulgarians	150,000	Roman „	4,000
Romanians	160,000	Protestants	400
Jews	1,500	Jews	1,500
Gipsies	18,000	Mohammedans	500
Foreigners	1,000		
	1,352,522		1,352,522

* Estimated at 1,377,068 at close of 1875.

Romania.

Area 46,798 square miles; population 4,850,000; density 104.

Nationalities.		*Religions.*	
Romanians	4,224,700	Greek Catholics	4,502,700
Jews	250,000	Lipovani	8,000
Gipsies	190,000	Roman Catholics	50,000
Bulgarians	90,000	Protestants	30,000
Magyars	45,000	Armenians	8,000
Russians	15,000	Jews	250,000
Armenians	8,000	Mohammedans	1,300
Greeks	6,000		
Turks	1,300		
Foreigners	10,000		
	4,850,000		4,850,000

Montenegro.

Area 1,700 square miles; population 196,000; density 115.

TABLE III.—*Turkey. Religions.*

	1 Constantinople (Europe).	2 Dobraja.	3 Bulgaria.	4 Bosnia.	5 Albania.	6 Turkey of the Greeks.	7 Greek Islands (Asia).
Mohammedans—							
Turks	365,000	184,500	789,000	5,000	18,000	346,000	90,000
Others	20,000	13,500	535,000	613,000	1,067,000	191,000	5,000
Christians—							
Greek	157,000	105,000	2,191,200	449,500	498,000	1,304,750	322,868
Armenian	60,000	3,000	20,000	—	—	6,000	—
Roman Catholic	50,000	2,000	60,000	160,000	150,000	4,000	2,000
Protestant	5,000	2,000	2,000	500	—	500	—
Maronites, &c.	—	—	—	—	—	—	—
Total	272,000	112,000	2,273,200	610,000	648,000	1,315,250	324,868
Yezidi and Kizilbashi	—	—	—	—	—	—	—
Jews	23,000	2,000	26,800	3,000	2,000	22,000	2,000
Gipsies	5,000	6,000	57,000	12,000	18,000	6,750	—
Total	685,000	318,000	3,681,000	1,243,000	1,753,000	1,881,000	421,868

	8 Asia Minor.	9 Kurdistan and Armenia.	10 Arabistan.	11 Turkey in Europe.	12 Turkey in Asia.	13 Grand Total.	14 Per Cent.
Mohammedans—							
Turks	5,639,500	514,000	700,000	1,767,500	5,973,500	8,741,000	33·6
Others	179,350	1,244,500	4,851,000	2,479,500	6,299,850	8,778,350	33·8
Christians—							
Greek	748,000	155,000	259,000	4,705,450	1,484,868	6,190,318	23·8
Armenian	329,500	323,600	82,000	89,000	735,100	824,100	3·2
Roman Catholic	35,000	8,100	55,000	426,000	100,100	526,100	2·0
Protestant	4,150	1,300	5,000	10,000	10,450	20,450	0·1
Maronites, &c.	—	112,000	375,000	—	487,000	487,000	1·9
Total	1,116,650	600,000	776,000	5,230,450	2,817,518	8,047,968	31·0
Yezidi and Kizilbashi	—	12,000	50,000	—	62,000	62,000	0·2
Jews	40,000	3,000	61,000	78,000	106,000	184,800	0·7
Gipsies	17,500	4,500	45,000	104,750	67,000	171,750	0·7
Total	6,993,000	2,378,000	6,483,000	9,661,000	16,325,868	25,986,868	100·0

TABLE IV.—*Turkey.*

	Constantinople (Europe).	Dobraja.	Bulgaria.	Bosnia.	Albania.	Turkey of the Greeks.
Turks and Tatars	365,000	184,500	789,000	5,000	18,000	346,000
Greco-Latins—						
Greeks	130,000	11,000	110,000	—	87,000	1,127,000
Albanians	20,000	—	250,000	30,000	1,523,000	94,000
Romanians and Zinzares	7,000	35,000	17,200	—	—	130,000
Slavs—						
Bulgarians	20,000	57,000	2,323,800	—	35,000	137,750
Servians	10,000	—	5,000	1,192,000	60,000	—
Russians	—	10,000	—	—	—	—
Other Europeans	25,000	3,000	6,000	1,000	—	3,500
Iranians—						
Armenians	80,000	4,000	21,200	—	—	7,000
Kurds	—	—	—	—	—	—
Iberians—						
Grusians, Lazi, &c.	—	—	—	—	—	—
Circassians, &c.	—	5,000	75,000	—	10,000	5,000
Semites—						
Syrians and Arabs	—	500	—	—	—	2,000
Jews	23,000	2,000	26,800	3,000	2,000	22,000
Gipsies	5,000	6,000	57,000	12,000	18,000	6,750
Negroes	—	—	—	—	—	—
Total	685,000	318,000	3,681,000	1,243,000	1,753,000	1,881,000

* Inclusive of army and navy, viz.,

Nationalities.

Greek Islands (Asia).	Asia Minor.	Kurdistan and Armenia.	Arabistan.	Turkey in Europe.*	Turkey in Asia.*	Total.	Per Cent.
90,000	5,639,500	514,000	700,000	1,767,500	6,973,500	8,741,000	33·6
323,868	653,000	5,000	65,000	1,465,000	1,046,868	2,511,868	9·7
—	—	—	—	1,920,000	3,000	1,923,000	7·4
—	—	—	—	189,200	—	189,200	0·7
—	3,000	—	—	2,575,550	3,000	2,578,550	9·9
—	—	—	—	1,272,000	—	1,272,000	4·9
—	2,000	—	—	10,000	2,000	12,000	0·1
1,000	7,000	—	5,000	38,500	13,000	51,500	0·2
—	345,000	333,000	82,000	112,200	760,000	872,200	3·4
—	50,000	1,186,500	375,000	1,000	1,612,500	1,613,500	6·2
—	200,000	100,000	—	1,000	301,000	302,000	1·2
—	16,000	12,000	—	98,000	28,000	126,000	0·5
—	20,000	220,000	5,100,000	27,500	5,355,000	5,382,500	20·8
2,000	40,000	3,000	61,000	78,800	106,000	184,800	0·7
—	17,500	4,500	45,000	104,750	67,000	171,750	0·7
5,000	—	—	50,000	—	55,000	55,000	0·2
421,868	6,993,000	2,378,000	6,483,000	9,661,000	16,325,868	25,986,868	100·0

100,000 in Europe and 50,000 in Asia.

TABLE V.—*Russia in*

	Great Russia.	Northern Russia.	German Baltic Provinces.	Western (White) Russia.	Little Russia.
Slavs—					
Russians	22,433,570	1,344,081	50,687	6,228,991	6,966,692
Poles	46,573	2,995	15,501	642,952	65,387
Other Slavs	—	—	—	7,182	—
Lithuanians	2,827	—	863,844	1,401,764	4
Germanic—					
Germans	57,242	1,832	119,322	55,237	7,247
Swedes	2,577	—	6,016	—	—
English	188	—	—	—	—
Greco-Latin—					
Romanians	—	—	—	11,596	—
Greeks	147	—	—	10	365
French	481	—	—	—	—
Iranian—					
Armenians	463	—	—	6	38
Indian—					
Gipsies	4,833	68	172	1,733	878
Semitic—					
Jews	16,705	952	40,811	1,117,982	347,372
Iberian—					
Georgians and Adyghe	181	—	—	—	—
Fins—					
Kareldans	216,627	70,119	229	—	—
Chudes	22,466	42,166	736,025	1,169	—
Permians	5	85,070	—	—	—
Ugrians (Voguls)	—	—	—	—	—
Volga Fins	217,537	—	—	—	50
Samoyeds	—	5,370	—	—	—
Tatarised Fins—					
Bashkirs	—	—	—	—	—
Meschcheryaks	7,480	—	—	—	—
Teptyars	—	—	—	—	—
Bessermanians	—	—	—	—	—
Chuvash	—	—	—	—	—
Tatars—					
Tatars proper	73,071	201	65	7,146	225
Nogai	—	—	—	—	—
Turkomans	—	—	—	—	—
Karakalpaks	—	—	—	—	—
Kirgiz	—	—	—	—	—
Mongols—					
Calmucks	—	—	—	—	—
Total	23,102,973	1,552,854	1,842,672	9,475,768	7,388,258

Note.—This table is based exclusively upon Col. Rittich's notes accompanying an ethnographical map of European Russia, and reproduced in Petermann's "Mittheilungen" for 1877. The figures refer to the year 1867. No notice has been taken of foreign residents. The statement that there were but 188 English in Russia, is simply absurd. In Petersburg alone there are 2,092 English and Americans, besides 3,087 French, 444 Italians, &c. In 1870 there were in European Russia 149,283 foreign residents, and in Poland 51,078.

Europe. Nationalities.

Southern Russia.	Eastern Russia.	Poland.	Finland.	Russia in Europe.	Per Cent.	
						Slavs—
4,062,787	10,542,526	485,071	51,000	52,175,593*	73·0	Russians
71,785	13,549	3,905,971	—	4,764,713	6·7	Poles
101,907	—	—	—	109,089†	—	Other Slavs
—	—	214,241	—	2,482,680‡	3·4	Lithuanians
						Germanic—
156,118	257,794	331,679	—	983,471	1·4	Germans
335	—	—	264,093	273,021	—	Swedes
—	—	—	—	188	—	English
						Greco-Latin—
636,868	—	—	—	648,464	—	Romanians
76,610	—	—	—	77,132	—	Greeks
555	—	—	—	1,036	—	French
						Iranian—
28,726	4,967	—	—	34,200	—	Armenians
						Indian—
3,290	198	482	—	11,654	—	Gipsies
						Semitic—
256,949	4,075	767,299	—	2,552,145	3·5	Jews
						Iberian—
—	617	—	—	798	—	Georgians and Adyghe
						Fins—
—	—	—	1,726,576	2,013,551	2·8	Kareldans
814	552	—	1,396	804,588§	1·1	Chudes
—	308,162	—	—	393,237‖	0·5	Permians
—	2,031	—	—	2,031	—	Ugrians (Voguls)
—	834,112	—	—	1,051,699¶	1·5	Volga Fins
—	—	—	—	5,370	—	Samoyeds
						Tatarised Fins—
—	755,868	—	—	755,868	1·0	Bashkirs
—	128,983	—	—	136,463	—	Meschcheryaks
—	126,023	—	—	126,023	—	Teptyars
—	1,443	—	—	1,443	—	Bessermanians
—	569,894	—	—	569,894	—	Chuvash
						Tatars—
61,730	1,069,298	874	—	1,212,610	1·7	Tatars proper
15,585	—	—	—	15,585	—	Nogai
—	1,781	—	—	1,781	—	Turkomans
—	2,162	—	—	2,162	—	Karakalpaks
—	156,462	—	—	156,462	—	Kirgiz
						Mongols—
24,603	82,928	—	—	107,531	—	Calmucks
5,498,662	14,860,425	5,705,617	2,043,253	71,470,482	—	Total

* 34,389,871 Great Russians, 14,193,665 Little Russians, and 3,592,057 White Russians.
† 93,685 Bulgarians, 7,790 Chechians, and 7,614 Servians.
‡ 811,031 Litvani, 623,700 Shmudes (Samogitians), and 1,047,929 Letts.
§ 48,028 Chudes, 746,522 Ests, 2,541 Livs, and 7,497 Laps.
‖ 240,490 Votyaks, 67,315 Permians, and 85,432 Syryani.
¶ 259,745 Cheremis and 791,954 Mordvins.

TABLE VI.—*Russia in Asia. Nationalities.*

	Caucasus.	Siberia.	Central Asia.	Russia in Asia.	Per Cent.
Slavs—					
Russians	1,135,000	2,664,000	320,000	4,119,000	31·0
Poles	3,000	24,000	1,400	28,400	—
Germans	10,000	3,000	500	13,500	—
Greeks	4,000	—	—	4,000	—
Iranians—					
Tajiks, Sart, &c.	18,000	—	951,000	969,000	12·0
Kurds	11,000	—	—	11,000	
Afghans	—	—	4,000	4,000	
Ossetes	30,000	—	—	30,000	
Armenians	620,000	—	—	620,000	
Indian—					
Gipsies	3,000	—	5,000	8,000	—
Hindus	—	—	1,000	1,000	—
Semitic—					
Jews	23,000	12,000	4,000	39,000	—
Arabs	—	—	1,500	1,500	—
Iberians—					
Georgians, &c.	1,100,000	—	—	1,100,000	8·4
Circassians, &c.	800,000	—	—	800,000	—
Fins—					
Voguls	—	5,220	—	5,220	0·3
Ostyaks	—	27,200	—	27,200	
Samoyed	—	5,700	—	5,700	
Soyot	—	8,000	—	8,000	
Tatars—					
Tatars	1,000,000	84,900	30,000	1,114,900	9·5
Kurama	—	—	20,000	20,000	
Nogai	76,000	—	—	76,000	
Kumuks	40,000	—	—	40,000	
Ozebeks	—	—	793,600	793,600	8·8
Turkomans	10,000	—	283,000	293,000	
Karakalpaks	—	—	70,000	70,000	
Kirgiz	—	10,000	2,071,000	2,081,000	17·4
Burut (Black Kiyil)	—	—	210,000	210,000	
Yakutes	—	210,000	—	210,000	—
Mongols—					
Calmucks	10,000	33,800	40,000	83,800	3·0
Buryats	—	250,000	—	250,000	
Tangur	—	19,700	—	19,700	
Chinese and Manju	—	14,000	10,000	24,000	
Koreans	—	3,500	—	3,500	
Hyperboreans	—	29,710*	—	29,710	—
Total	4,893,000	3,404,730	4,816,000	13,113,730	100·0

* Viz., 1,600 Yukahires, 5,250 Koryaks, 12,000 Chukchi, 4,360 Kamchadales, 3,000 Gilyaks, 2,500 Ainos, and 1,000 Namollo (Eskimos).

TABLE VII.—*Russian Empire. Religions.*

	Great Russia.	Northern Russia.	German Baltic Provinces.	West (White) Russia.	Little Russia.	South Russia.	East Russia.
Greek, Orthodox	23,065,603	1,561,210	192,656	5,823,879	7,098,229	4,954,747	12,157,632
„ Dissenters	345,287	13,420	17,216	132,000	61,933	116,260	306,257
Roman Catholics	52,694	1,820	64,674	2,554,205	89,379	83,932	50,856
Armenians	671	—	2	26	34	32,797	5,190
Protestants	211,483	2,226	1,626,123	99,872	7,827	186,424	221,533
Jews	23,421	1,083	43,256	1,204,017	377,779	291,045	3,777
Mohammedans	60,094	208	64	7,959	179	127,795	2,167,359
Pagans	134	576	—	—	1	26,302	231,112
Total	23,759,387	1,580,543	1,943,991	9,822,259	7,635,361	5,819,302	15,143,716

	Poland.	Finland.	Caucasus.	Siberia.	Central Asia.	Europe.	Total Empire.	Per Cent.
Greek, Orthodox	34,137	51,000	2,100,000	2,936,827	275,000	54,939,091	60,250,918	69·4
„ Dissenters	4,926	—	48,000	79,347	47,000	997,600	1,167,947	1·3
Roman Catholics	4,843,441*	830	26,000	24,316	1,400	7,741,831*	7,793,547*	9·0
Armenians	—	—	600,000	15	100	38,720	638,835	0·7
Protestants	327,815	1,830,792	8,000	5,563	500	4,514,095	4,532,158	5·2
Jews	815,433	—	23,000	11,941	3,500	2,759,811	2,798,252	3·2
Mohammedans	426	—	2,083,000	61,059	4,463,500	2,364,084	8,971,643	10·4
Pagans	245	—	5,000	286,016	25,000	258,370	574,386	0·7
Total	6,026,421	1,882,622	4,893,000	3,405,084	4,816,000	73,613,602	86,727,686	100·0

* Inclusive of 246,485 United Greeks in Poland.

Discussion *on* Mr. Ravenstein's Paper.

The Rev. J. Long said he had listened to the paper with a great deal of interest. Five years ago, when he was at Constantinople, and was making investigations into the statistics of the population in Turkey, he was told by the Russian Ambassador that when he made inquiries of the Turks as to the statistics of the country for the purposes of the International Statistical Congress held at St. Petersburg, 1872, they replied that *they kept no statistics*. There was therefore a great difficulty in forming a correct estimate of the population of Turkey. But, on the other hand, during the two years in which he paid visits to Russia at different periods, he had devoted a good deal of attention to Russian statistics, and he must say that there were no people who were working more indefatigably and more nobly than many of the Russians were in this cause, at the head of whom was M. Semenow. He had examined the statistics that were collected in the Caucasus, Tiflis, Odessa, and other parts of Russia, and he had also seen a good deal of statistics in India, but both needed testing. He was at the International Congress at St. Petersburg in 1872, and wished to raise the question as to what were the data on which they founded the statistics; they were not inclined to enter into it. Some time ago he read a work upon the statistics of cholera in Russia. He tabulated some returns, and showed them to some medical men, who were utterly surprised that the returns from the hospitals in Russia were more complete than those supplied in England. But it was well known how it was done. Many of the subordinate officials, if they had not the statistics at hand would very easily manufacture them; this is understood in India also. He did not quite understand what Mr. Ravenstein had said about the proportion of non-Russians in the Russian Empire. He had got an interesting work in the Russian language sent him by a great statistician, Budhelof, consisting of statistical tables of the Slav races in Europe. The Slavs in Russia were returned at 57,000,000. The Slav race was the great nucleus in Russia; and there was an important point to be considered as to the Slavs in relation to English work in India. They were a semi-oriental race, and a link between east and west. He believed that there was a great future in store for them, as a bridge over the gulf between east and west they were destined to hold an important position. It was well known in India what difficulty the Anglo-Saxons had in amalgamating with the Indian people; and the plan adopted by the East India Company to solve this problem had been partially adopted by the Queen's Government, namely, to give their European officials a semi-oriental training as the only means of influencing the population of that vast empire. As regards the future of the East, it was particularly important to look to the progress of the Slav race, as a semi-oriental race was a better medium of diffusing information. There

was one particular class that Mr. Ravenstein had not referred to, which he had met in Russia, and that was the *gipsies*. He had come in contact with them on the banks of the Volga, in Moscow, and in various other parts of Russia and the Danubian provinces. He had no statistical account of them, because they were under a sort of ban, and in terror of the police, and they kept themselves as much concealed as possible; but some of them had intermarried into Russian noble families. There was another class which was very important under the head of religion, the published returns regarding them showed the difficulty in Russia of collecting statistics as to the Dissenters, or Raskolniks. They were in the returns of Budelhof represented as numbering about 3,000,000, and in some Russian statistical tables were reckoned for less, but he had consulted a number of intelligent Russians, and they calculated that they were not less than 10,000,000; this showed how very deficient the statistics were on the point.

He had a table of returns given him by a Russian gentleman, in which was stated the number of Russian travellers in Asia during the period of twenty years, 1854-74, amounted to 216, who were collecting valuable statistics in the countries they visited. Mr. Ravenstein had referred to the German element in Russia. It was curious to observe that as difficulties were found in this country with regard to the Celtic race, and the feeling they manifested towards the Saxons, so in Russia there was a strong race antagonism between the Germans and the Russians. He had not seen, even in India itself, stronger feelings of antagonism of race between the Saxon and many native races than he had observed in Russia between the Germans and the Slavs. The antagonism to the German element in Russia was something intense, and yet without Germany Russia could never have become what it was at the present time.

In reply to the President, the Rev. J. Long said he thought it was generally agreed that the gipsies were expelled from India about the time of Timour. He was struck, when on the banks of the Volga, to find a number of them who used a language mixed up with Hindostanee. He was in Servia about two years ago, when he met a party of gipsies, and he really thought the gipsies he saw there were Bengalese.

Mr. Hyde Clarke said there could hardly be a better authority on the subject of Russia than Mr. Long, who had more particularly brought to bear on the subject that great experience he acquired in India, and he had spent likewise much time in Turkey. He was a man whose sympathies were wide, and whose powers of observation were great; and if he would communicate to the Society the materials he had gathered, they would form a very useful supplement to the paper which Mr. Ravenstein had laid before the Society. A question of this kind was very difficult to deal with. With regard to Turkey, when he was a Counsellor of the Government, he was concerned in instituting a statistical department, but no materials for statistics were provided, and so the statistical department did not produce any results. With regard to the subject of population,

there were some elements of material. A most distinguished statesman, Ahmed Vefyk Pasha, upon whom the Society conferred the honour of its membership, had devoted a great deal of labour to that subject, and, with Subhi Pasha and other leading statesmen, he had been employed on a commission of the Cadasdre for the purpose of ascertaining the resources of the several provinces in Europe and Asia, and these data were of considerable value as evidence. There were also other materials, and particularly those of the Salnameh, to which he would call Mr. Ravenstein's attention, because it was this year alone that from the Salnameh or Imperial almanac, some materials were obtained for the population. He would particularly call attention to the paper of Captain Stab, a diplomatist of great authority on Turkey, published in the "Society of Arts Journal," which had been produced also in Constantinople, and had been published without acknowledgment in the "Allgemeine Zeitung." He could remark on Mr. Ravenstein's paper more freely because he was glad to own he was one of those who felt sympathy with and even a bias in favour of Turkey. He could not, therefore, complain of Mr. Ravenstein who, though not impartial, had to his mind placed the population of Turkey at too high a figure. No doubt Mr. Ravenstein had professed to give a fair and impartial statement on both sides, nevertheless, those who had a practical experience and knowledge of the country, might be inclined to differ with him as to many of the facts and the deductions he drew from them. There was one point which had been prominently brought forward in contrast between Russia and Turkey, namely, that the Russians had an intellectual superiority over the populations of their empire, and that the Turks had not. Why the Turkish population should, by any one who knew anything about it, be stated to be in a position of intellectual inferiority, he could not understand; and he would ask to which of the populations of Turkey were they to be held inferior? Were they inferior to the Kurds, for instance, or to the Romanians, or to the Servians? He would go further and ask if they were inferior at the present day to the Jews in that country, or to the Arabs, or Greeks, or Armenians? If statistics were to be made of intellectual activity in Turkey, it would be found that the Turks by no means occupied such a low position compared with the other races as some persons were in the habit of attributing to them. He believed there was no foundation for such an assumption, and he would invite Mr. Ravenstein to examine that part of the question statistically, and to apply to it the same amount of labour as he had to the question of Russian population. It was a question worth examining, because a great deal depended upon that. There were intellectual differences between race and race. The Turks were not such a brilliant population as some of the others, any more than the English were as compared with the Irish or Hindoos, but when the results were looked at morally, socially, and industriously, he was convinced it would be found that the Turks were by no means inferior to the other branches of the population. The Turks were represented as inferior to other Europeans, as being lazy; while it would be found that a large part of the produce of the country was raised by them, and not by persons for whom was claimed a superior

position to them in every respect. The Turks had held their own in Turkey by their superior qualities, and not by their inferior capacity. With regard to the population of the Caucasus—the Georgian population—there was some portion of them not by any means so unwarlike as Mr. Ravenstein supposed. He would name the Swans, still maintaining their independence against Russian tyranny and oppression, and the Ladians of Asia Minor. With regard to the position of the Turks in Europe, it must be borne in mind that the Turkish Government had awarded to its subject populations a large measure of local self-government, not to cities and towns, but to religious communities, instead of the crushing centralisation and unification of the Russians. That of course very much weakened the centre of government in Turkey, while it gave to those populations a degree of liberty which was very little understood in this country. With regard to those who were called oppressed Christians, there was no body of them, no newly formed Protestant community, which did not possess greater privileges than any in Russia, greater even than the nobles in the province of Moscow, greater than the best supported privileges of the Germans in the Baltic provinces. In drawing a comparison between the position of the Turks and that of the Russians as to their numerical or political value, in Turkey as in Russia two elements must be allowed for. Religion certainly constituted a tie which united the Turk and the Slav Mussulmans and the Arab Mussulmans, and thereby gave to the Turks greater power. Another circumstance which gave greater influence to the Turks as compared with Mussulmans and with Christians, was the diffusion of the Turkish language as a general language. The effect of persons speaking two or three languages in Turkey, of course had its influence; and to obtain a clearer result it was necessary for Mr. Ravenstein to give a view of the extent to which the several languages were spoken in Turkey, not by their own population but by others. It was in that way, for instance, that the Greeks exercised a much greater influence in Turkey than was supposed, because their language was adopted as a double language by the Albanians and by many other populations. Of course the subject was so wide, and Mr. Ravenstein had entered into such detail, that it was impossible to touch upon all the points raised by him.

Mr. Cornelius Walford said that during several visits to Russia he had had some opportunities of inquiring into statistical results. This fact enabled him to speak with some degree of confidence on the subject. He had found in the course of his observations and inquiries, that the population of Russia was composed of three sections; the nobles, who were for the most part pure Russians, who lived in almost Parisian luxury and spent their money very freely, but who, for the most part, had small families, not on the ground of incapacity to keep large families, but because the mode of life rendered large families inconvenient. The Germans formed the mercantile class. In the north they held the key to the commerce of the country; and in the south the Armenians and the Jews held a strong place. The Germans were

a very populous, steady, thriving commercial people, mostly married, and living in middle class houses in towns, and having large families; and he was entirely of opinion that the progress of Russia within the last few years was in a great degree due to the German element. With regard to the serfs, their position had undergone a great change in the reign of the present emperor. They had now become small farmers and cultivators of the soil. In days gone by they lived in very poor villages, but he observed last year, when on a visit to Russia, a great improvement in their cottages, and he noticed that invariably the Russian villages were swarming with children. With regard to the population, one was struck, in visiting many of the smaller towns in Russia, with the almost entire absence of males of vigorous age. They had gone to the army, and, in consequence, the women had unfortunately to do their work. In his travels last year he observed a distillery in course of construction, and nine out of ten of the workers were women. He had also observed that the barges were unloaded by the women. This was very much against the progress of the population; but with all these drawbacks it was increasing very much. In Russia, the marriage-rate, as far as he had any statistics upon it, would compare favourably with almost any country in Europe. In this view he believed he was supported by the opinion of Mr. Michell, the late British consul in St. Petersburg, who, with his brother, the present consul, had paid great attention to the statistics of Russia. It was no new fact to many of the members of the Society to be told that Russia, in the matter of statistics, was not so far behind as many outside persons were disposed to believe. He did not know if Russia got statistics for the love of them; at all events she got them; and for a purpose, which he believed was in advance of some other countries in Europe, namely, for the purpose of making use of them! Her statesmen in fact knew how to make use of them. She had, for instance, a very accurate record of the fires that took place in each of the provinces of her great empire. Why? Not perhaps because she wanted simple statistics of fires, but because in these statistics she could read the measure of political content or discontent which prevailed; in the mercantile prosperity or otherwise which existed amongst the classes wherein these fires happened. The Statistical Bureau of Paris published returns of the populations of the different countries, and they gave us the recent figures, Russia (in Europe) 71,700,000, and the population of Turkey in Asia they gave at 47,000,000. With regard to the population of Turkey, he thought that wherever polygamy prevailed, and the houses were so much closed as they were in Turkey, a great difficulty existed in obtaining true returns of the population, more particularly of the women and children. Then as to the proportion of male and female children, any one who had inquired into the subject at all would not have any doubt that where polygamy prevailed more females were born than males. In every State in Europe where polygamy did not prevail, there were more males than females. If, in the statistical returns obtained from Turkey, there were more males always returned than females, then a doubt is thrown over the statistics altogether.

Dr. Hyde Clarke, in answer to Mr. Walford, said that with regard to polygamy he had paid some attention to that subject in Turkey, and had read a paper at the British Association at Brighton. So far as he saw, the number of female children under polygamy was larger. He was supported by Indian authorities in the view that the permanent produce of polygamy was not greater than that of monogamy. One governing feature appeared to be the power of permanent production of the man. The surviving progeny bore no proportion to the number of children born, but of 50, 70, or 80 only 3 or 5 children would reproduce. It was a great mistake to represent Turkey as a polygamous country, for it was no more so than this. In Turkey, if a man wanted to have a wife he must keep her; she was not allowed to go into the fields and be worked as the Christian women were. This governed the question in a great degree, and polygamy was exceptional and diminishing. With regard to another point, namely, emigration in Greece and Turkey, emigration took place into Turkey and not out of it. The male Greeks went from constitutional Greece into Turkey; and this fact of their migration ought to be taken into account in making a real estimate of what was the practical government of Turkey, and its superiority over that of the neighbouring countries.

Mr. E. Hepple Hall said he could not claim much experience in regard to Russia and Turkey, although he had been in both countries; but he should like to give his experience of the Russians in America. It had been said with great truth and fairness that the Russians were not emigrants in the sense that the Germans were an emigrating people; but, as a fact, they did emigrate in very considerable numbers. Last year he happened to be in outlying waste portions which, a few years ago, were a howling wilderness. A very considerable portion of Minnesota and Dacotah has been settled by enterprising Russians. They were not Russians in the sense in which they were generally spoken of in the present crisis with Turkey, but "Memnonites," and his experience with them was of an interesting character. He went amongst them invited by one of the overseers of their large tracks. They were settled on the club farming and "Grange" principles advocated by Horace Greely and others. They were entirely pastoral and agricultural, and those people, who were supposed to be a second-rate body of small farmers at home, had made that "wilderness to flower like a garden." There was another fact he observed which did great credit to their general intelligence. They had discovered the only way of dealing with the great pest in the West, namely, the grasshopper. It was a singular fact that in many parts of Russia the same terrible scourge was felt. These Memnonite colonists had a practical way of dealing with this scourge never discovered by the Americans. Instead of allowing the grasshoppers to hatch, take flight, and finally to eat away every blade of grass, they covered them in their nests and hatching-grounds among the foothills with a loose stubble, and set fire to it, millions of young "hoppers" were thus put out of existence in a minute. His experience on the Upper Missouri and Minnesota rivers, and on the

Big Sioux and the Little Sioux, led him to believe that a people so enterprising, so thrifty, and so well-advanced abroad must have a fairly enlightened condition of affairs at home.

Mr. Lister said that he was considerably surprised at hearing one of the speakers attribute the decrease in the population to men being sent to the army, considering that the number of men in the whole of the Russian army will amount to 3,000,000 by the time the present arrangements are complete. He was inclined to think that the decrease was owing to the laziness of the men, who made their female relatives do all the work they could. He observed that the author had put the date of the conquest of Finland at 1812, whereas Mr. Wallace, the writer on Russia, put it at 1809. He should be glad to know if the Letts, Livs, and Ests came from the Russians properly so called, or whether they were Slavonic or Teutonic in their origin. In St. Petersburg the population was diminishing owing to the unhealthiness of the place, and was simply kept up by emigrants from the country. He should be obliged if Mr. Ravenstein could give any information on the subject.

Dr. Farr said that having been a referee, he had had the greatest satisfaction in hearing the paper read; Mr. Ravenstein had given a great deal of information, and had put it in a very clear way, so as to give a better idea than they had had before of the population of the two empires that were now in conflict. There was no doubt that the statistics of both the countries were imperfect. Dr. Mouat and others who had been at the Congress, could state that in Russia there was to be a census taken by name as in England, and probably there would be a census of this description by next year, unless the war prevented it. Turkey had never paid much attention to statistics. However, she did once send a delegate to the Congress, Daoud Effendi, a man of great intelligence; but she had never sent a delegate since. He should never expect Turkey to survive unless she consented to become statistical like the rest of Europe. Dr. Hyde Clarke had paid a very great compliment to the Turks, whom he knew well, and asserted that they were equal to the Greeks in intelligence; but he could not admit that until he had some more evident results of Turkish ingenuity, even some such ingenuity as the Russians had displayed in America in getting rid of the grasshoppers. He hoped that if Turkey survived she would be able to take a census of the population after the war.

Mr. Ravenstein, in reply, said Moscow and St. Petersburg had certainly increased very rapidly, but they had been fed by immigration. The males preponderated in these towns to such an extent, that the presence of large numbers of soldiers was insufficient to account for it, and the natural increase in towns like these could not be very great. There were many towns in England, and more especially in Yorkshire, which were in the same position as regarded the disparity in the numbers of the two sexes, but he knew of no other town in the world where this

disparity exceeded that existing in Moscow or St. Petersburg. His figures certainly did not agree in every instance with statements put forward elsewhere, but he thought he had very good reasons for disagreeing. The Turks no doubt were in the habit of periodically enumerating the male sex, but the manner in which the results were published called for a careful scrutiny. In the statement referred to the number of males had undoubtedly been given in the case of several instances, instead of the total number of inhabitants. As regarded European Turkey he had trusted in the main to the statements put forward by Dr. Yakshich, the director of the Statistical Office of Servia, which had turned out some very good work, and to Mr. Kutschera, an Austrian consul. As regarded Asia, he had been able, in several instances, to avail himself of consular reports, and although his figures, especially in the case of Syria, were large, he believed that he erred, if at all, on the right side. Indeed, he thought, that a careful census would reveal the fact that the population of Turkey was even greater than he had stated. The country, wretchedly governed as it was, supported relatively but a very small population. As regarded Russia he agreed with Dr. Farr and others that the statistics published were not wholly to be trusted, but honest and serious efforts were being made by the Government to ascertain the truth. As far as the nationalities were concerned, he had trusted in the main to the elaborate statements published by Rittich and Venyukof; whilst the numbers belonging to different religions had been taken from the statistical year books. He had no reason to suppose that these figures were incorrect. It certainly was the aim of statisticians to ascertain each numerical proportion; and to set forth, in an absolutely correct manner, the present condition of various States, in order that we might judge of their resources with a view to their future development. But this *beau ideal* of statistical inquiries was but rarely realised, and certainly, in the case of countries like Turkey and Russia, we must be content if we got numerical results even approximately correct.

MISCELLANEA.

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I.—*Economic Science and the British Association.*

Our readers will remember that at the annual meeting of the Society in June, Dr. Farr referred to the subject of a suggestion which had been made to the Council of the British Association for the Advancement of Science, to abolish Section F (Economic Science and Statistics). This strange suggestion very naturally raised a good deal of opposition, but has not yet been formally rejected. As the matter may be of some historical interest, we give below two papers which have been laid before the Council of the British Association, giving the reasons for the suggestion on the one side, and the grounds of the opposition on the other; the first paper (*a*) being by Mr. Galton, and the second (*b*) by Dr. Farr. Mr. Galton has been so well answered by Dr. Farr, that it is unnecessary to add anything here, but we are certainly surprised to find Mr. Galton objecting to the British Association including in its programme a department of science in which so much good scientific work has been done in past times, and where there is hope yet of still greater results from the prosecution of inquiries in a scientific spirit.

"(*a*). *Considerations adverse to the Maintenance of Section F (Economic Science and Statistics), submitted by Mr. Francis Galton to the Committee appointed by the Council to consider and report on the possibility of excluding unscientific or otherwise unsuitable papers and discussions from the sectional proceedings of the Association.*

"The following considerations are submitted by the writer to serve as a basis of discussion and to elicit arguments on the other side. The subject has many aspects and touches many interests, and has not as yet been sufficiently ventilated to justify a final judgment upon it. On these grounds, although his remarks will be found to be adverse to the continuance of the Section, the author reserves full freedom as to his own final opinion.

"The chief reasons which appear to have prompted the establishment of the Section of Economic Science and Statistics, and which may still be alleged in favour of its maintenance, may be briefly stated as follows:—

" 1. The principles on which Statistics are founded are derived from the theory of probabilities, and have exercised, and will still exercise, the ingenuity of many generations of the ablest mathematicians.

" 2. The Section concerns itself with an important part of human knowledge, which ought not to be ignored in a general association of scientific men.

" 3. Its subject matter is less removed from the general interests of the public than that of any other of the Sections; consequently it attracts large audiences of both sexes who desire to take part in the Association, but who have not the special knowledge that would enable them to appreciate the technical memoirs read in other Sections.

" 4. It affords an opportunity of enlisting into the service of the Association, as Presidents or Vice-Presidents of a Section, persons of local influence and of political importance.

" A just idea of the character of the subjects now discussed in the Section may be obtained by collecting the titles of the memoirs read before it in three recent consecutive years, and sorting them, in so far as their great diversity admits, into cognate groups. The following is the result, the longer titles being in a few cases abbreviated:—

" *Papers Read before Section F, Economic Science and Statistics, in the Years* 1873-75.

" Economic Law of Strikes.
" Commercial Panics.
" Science of Capital and Money.
" Capital and Labour.
" Laws affecting Prices of Commodities and Labour; and on Strikes and Lockouts.
" Free Trade in Labour.
" Poor Law and its Effect on Thrift.
" Cause of Insolvency in Life Insurance Companies.
" Relation of Banking Reserve of Bank of England to Current Rate of Interest.
" Increase of Price of certain Necessaries and its Relation to Rates of Wages, &c.
" Income Tax Question.
" Income Fallacies and some of their consequences.
" The future of the United States.
" The privileges over Land wrongly called Property.
" Agricultural Statistics and Waste Lands.
" Ulster Tenant Right.
" Progress of the Coal Question.
" Statistics and observations of the National Debt from 1680.
" Compilation of Statistics, illustrated by the Irish Census Returns.
" Government Accounts, with further Suggestions for establishing a Domesday Book.
" Indian Railways and Indian Finance.
" Railways Amalgamated in Competing Groups.

" Postal Reform (two memoirs).
" Reform in the Work of the Medical Profession.
" Confederated Homes and Co-operative Housekeeping.
" East Morley and Bradford Savings Bank.
" Savings Bank in Schools.
" Principles of Penal Legislation.
" Reformatory and Industrial School System: its Evils and Dangers.
" Study of Education as a Science.
" Standard of National Education.
" Scheme for the Technical Education of those interested in Land.
" Teaching of Hygiène in Government Schools.
" Practical Difficulties in working the Elementary Education Act (1870).
" Industrial Schools.
" Educational Statistics of Bradford.
" Prevailing Mode of Preparation for Competitive Examinations.
" Economical Aspects of Endowments of Education and Original Research.
" Economic Use of Endowments.
" Sanitary Legislation and Organisation.
" A new Method of Promoting the Sanification of our Cities.
" Purity and Impurity in the Use and Abuse of Water.
" Reclamation and Sanification of the Pontine Marshes.
" Mortality of Adolescence.
" Value of European Life in India in its Social, Political, and Economic Aspects.
" Death-rates of some Health Resorts, and specially of Clifton.
" Comparative Mortality of Abstainers and Non-Abstainers from Alcoholic Liquors.
" Increase of Drunkenness among the Working Classes, and the Cause of it.
" Workmen's Dwellings from a Commercial Standpoint.
" Benefit Building Societies.
" Building Societies and the Act of 1874.
" Working of the Building Societies' Act (1874).
" Dwellings for the Industrial Classes.
" Workmen's Dwellings.
" Statistics of Free Public Libraries.
" Sericulture.
" Acclimatisation of the Silkworm.
" Peat.
" Use and Abuse of Peat.
" Shoddy Trade.
" Bradford Building Trade.
" Tanning of Sole Leather in Bristol.
" Rise and Progress of the Sugar Trade in Bristol.
" Trade and Commerce of the City and Port of Bristol.
" Industrial Position of Women as Affected by their Exclusion from the Suffrage.
" Domestic Service for Gentlewomen.

"Cost and Propriety of removing to England the Fallen Obelisk of Alexandria.

"Memoirs that might properly have been read in other Sections:—

"Influence of the Sun-spot Period upon the Price of Corn (in A).

"Legislative Protection to the Birds of Europe (in D).

"Influence of large Centres of Population on Intellectual Manifestation (in D, Anthropological Department).

"Need of Systematic Observations on Physical Characteristics of Man in Britain (in D, Anthropological Department).

"It will be observed that not a single memoir treats of the mathematical theory of Statistics, and it can hardly be doubted that if any such paper should be communicated to the Association, the proper place for it would be in Section A.

"It must be freely conceded that Section F deals with numerous and important matters of human knowledge; but this is not of itself a title to the existence of the Section, because many other equally important matters, such as history, are by common consent inappropriate subjects for the British Association. Usage has drawn a strong distinction between knowledge in its generality and science, confining the latter in its strictest sense to precise measurements and definite laws, which lead by such exact processes of reasoning to their results, that all minds are obliged to accept the latter as true. It is not to be expected that these stringent conditions should be rigorously observed in every memoir submitted to a scientific meeting, but they must not be too largely violated; and we have to consider whether the subjects actually discussed in Section F do not depart so widely from the scientific ideal as to make them unsuitable for the British Association.

"It would be a tedious and an ungrateful task to criticise in detail the multifarious topics embraced in the list we have given. But it is not necessary to undertake it, as it will be easy for men of science to judge for themselves by simply glancing over the list. It is believed that the general verdict of scientific men would be that few of the subjects treated of fall within the meaning of the word 'scientific,' and that the few of them that do would be wholly insufficient to occupy the time of the Section during the meeting. Even of these few, some, as shown in the last paragraph of the list, might have been communicated with equal or even greater propriety to other Sections. It would therefore seem impossible to continue the Section, owing to the experienced difficulty of finding suitable materials, if all the unscientific papers were excluded.

"It must be remarked that hardly any of the subjects in the above list, besides the few last named, would gain by being discussed by representatives of the special branches of science who are assembled at the British Association. This Section therefore occupies a peculiar position of isolation, being neither sufficiently scientific in itself, nor receiving help from the other Sections. In the first respect it may be alleged that the Anthropological Depart-

ment and the Geographical Section are open to the same charge; but in the latter respect the case is very different. The leading anthropologists are physiologists, geologists, or geographers, and the proceedings of the department are largely indebted to their special knowledge. Geography is apt to receive light from every department of science, and to give no less than it receives. This is not the case with Section F: it stands detached from all the other Sections, except in regard to a few subjects which might severally be handed over to one or other of them.

"A notable evidence that its work is alien to that of the Association generally is to be gathered from the fact that in the 112 lectures that have been given since the system of two annual lectures to the Association generally was first established in 1842, not a single one has been on either a statistical or an economic subject. Other evidence to the same effect is the small number of reports on statistical or economic subjects that have proceeded from Committees appointed by the General Committee to make investigations, and who receive grants of money to defray the cost of making them. It appears that in the nine years 1867-75 inclusive* there have been upwards of 250 reports, referring to perhaps 220 different subjects. Only four of these appear to be strictly appropriate to Section F, namely:—Pressure of Taxation on Real Property; Sewage; on Arrangements connected with the approaching Census; and on combinations of Capital and Labour.†

"It would appear from all this that the subjects commonly brought before Section F cannot be considered scientific in the sense of the word that is sanctioned by the usages of the British Association. Also that as the Section is isolated and avowedly attracts much more than its share of persons of both sexes who have had no scientific training, its discussions are apt to become even less scientific than they would otherwise have been. On the other hand, any public discredit which may be the result of its unscientific proceedings has to be borne by the whole Association.

"Stress must also be laid on the fact that it is important to keep the number of Sections as small as possible; for difficulties have arisen in almost every place of meeting in finding accommodation for the number that exist, while, owing to the rapid extension of science, pressing claims arise from time to time for new Sections.

"In conclusion, it must be recollected that the suppression of Section F would be little, if any, sensible hindrance to the progress of Economic Science and Statistics, because those subjects now find a more congenial and appropriate home in the Social Science Congress. The diversified topics included in the list of subjects already given can be distributed among its sections, each to one most competent to discuss it. There will always be a larger gathering of experts in these subjects at the Social Science Congress than can ever be assembled at the British Association; and

* "The year 1876 is omitted, because the Report for that year had not been issued at the time when these remarks were written.

† "The Metric Committee is excluded, as being quite within the functions of Sections A, B, or G, and indeed of other Sections.

the discussions in the former are in consequence more likely to be instructive and useful.

"Under these circumstances the question of the discontinuance of Section F appears to deserve the serious consideration of the Council.

"FRANCIS GALTON.

"*June*, 1877.

"(*b*). *Considerations, in the form of a Draft Report, submitted to Committee, favourable to the maintenance of Section F. By Dr. W. Farr.*

"The Committee has further inquired into the action of Section F, which has been for so many years an integral part of the British Association.

"They have before them a complete list of the Presidents of the Section and of every paper read.

"They find among the names of the Presidents—Babbage, Sandon (Earl of Harrowby), Sykes, Hallam, Wood (Lord Halifax), Earl Fitzwilliam, G. R. Porter, Lyttleton, Boileau, Whately, Heywood, Tooke, Houghton, Lord Stanley, Nassau Senior, Newmarch, Chadwick, Farr, Professor Rogers, Brown, Sir Stafford Northcote, Stanley Jevons, Lord Neaves, Professor Fawcett, W. E. Forster, M.P., and Sir George Campbell, many of whom delivered addresses of great interest and ability. Among the contributors of papers were, besides the presidents, many well-known statists and economists.

"The papers may be classed under the head of *Vital Statistics* (so named first by Laplace) and of *Economic Science*, the first including papers on population, the laws of population, the laws of mortality, of disease, of crime, under different conditions—the laws of birth and of marriage; admitting of many direct practical applications to the public health and to the public weal. The facts with which this section deals are of so much importance that they are observed and registered at great cost by every civilised Government in the world; and the relations of the different orders of facts admitting of admeasurement have been discussed by Halley, Simpson, Price, Morgan, Milne, Bailey, Gompertz, Deparcieux, Brown, Duvillard, Laplace, Fourier, Quetelet, Poisson and other men of science. In the year 1856 it was designated the Section of Economic Science and Statistics; and this brought within it the whole range of political economy as it was taught from the days of Adam Smith to Mill and Fawcett, Macleod and Rogers; but it is understood that the section deals especially with the facts of property, produce, and values, admitting of scientific determination and numerical expression.

"The section is popular and well attended, as Mr. Babbage foresaw.

"It no doubt attracts many who would not otherwise become members of the Association. The Association, in advance of some other scientific bodies, admits members of both sexes, and the number of ladies has latterly ranged from 600 to 1,058. Among

the 856 papers read in this section since its origin, 21 have been by ladies, amongst others by Florence Nightingale, Mrs. Grey, and Mary Carpenter. A paper was read by Miss Becker on Difficulties in working the Elementary Education Act, 1870. A paper was also read at Bristol, by Mrs. Crawshay, of South Wales, on Domestic Service for Gentlewomen, a question which she started, and in which she took much interest; but which it was supposed by many eminent members of the Association did not admit of scientific treatment.

"There is no doubt that into this section papers of little interest and relevance have occasionally found their way. The same, it could be easily shown, is unfortunately the case with other sections; and in all should be guarded against, as they will be, by the rules the Council has now established.

"A member of this committee requested one of the Secretaries of the Statistical Society to bring the matter before the Council of that Society, and to favour him with their views as to the desirability of maintaining statistics in its present connection with the British Association. The following is their reply:—

"'Statistical Society,

"'Sir, "'13*th July*, 1877.

"'At the meeting of the Council of the Statistical Society held yesterday, your letter addressed to one of the secretaries, respecting the suggestion made in a Committee of the Council of the British Association to discontinue the Section of Economic Science and Statistics, and inviting the opinion of this Council thereon, was duly submitted for consideration.

"'In reply, we are directed to state, with reference to the first question, 'Do they think it desirable to maintain the Section F of the British Association?'

"'That this Council is firmly of opinion that it would be undesirable in the interests of science generally, as well as of the particular sciences dealt with in Section F, to discontinue the section. According to the wording of the recommendation made to the Council of the British Association, those who made it would seem to be under the impression that the subjects of Section F are less 'purely scientific' than those treated in the other branches of the Association. But this impression is evidently most unscientific; and that it exists goes to show the expediency of retaining, if possible, 'Economic Science and Statistics' among the branches of the British Association. While so retained, Section F is a conspicuous advertisement to men of different sciences, and especially to those concerned with the various physical sciences, that other subjects of a far more complex and difficult character than those which are the subject matter of these physical sciences, but regarding which scientific knowledge is equally indispensable to mankind, ought to be included in a general scientific programme. Were the subjects of Section F excluded, the domain of science, in the view of those assembling at the British Association, would appear far more restricted than it really is; and there would, in fact, be excluded from it a department of knowledge where the scientific

method has already gained many of its most signal triumphs. It would seem to be a degradation of the British Association that the subjects of Section F—the whole subject of the life of man in communities—although there is a scientific order traceable in that life, should be excluded from notice.

"'Although to all appearance there has been some want of consideration in the suggestion to the British Association, the origin of it has no doubt been a natural one, and to a certain extent the Council can sympathise with the motives of it. Many unscientific papers have been brought before Section F, and these have been reported and discussed to the neglect of really scientific papers on other subjects. Section F is probably exposed more than any other section to the invasion of people interested in its subjects who have no scientific knowledge or training. Its subjects are also those of practical politics and philanthropy, and this brings to the discussion people who are politicians and philanthropists, but who are not men of science. For the same reason, the discussions on such subjects, whether scientific or not, are likely to be better reported than purely scientific discussions. Hence the irritation, which this Council can understand, among the members of a scientific body. But a sufficient remedy for what is evil in these tendencies would seem to be provided in the other recommendations of the Committee of the British Association, viz., to devise and apply rigorously most stringent rules against the admission of unscientific papers. In this work the Statistical Society would be disposed to co-operate, as it has co-operated in past times. There would probably still remain a proclivity to unscientific discussion, and the excessive reporting of unscientific discussions which could not be wholly removed; but in exchange for this evil, it must always be remembered, scientific men have a better opportunity in this section than in any other of communicating some notion of scientific method and its value, and of the conclusions of scientific study, to the unscientific multitude. If the British Association is to exist for the 'advancement of science,' it cannot but fulfil its end in making politicians and philanthropists generally aware of the necessity of scientific method and knowledge in their favourite subjects.

"'With regard to your second question, 'Do they see their way to suggest any practical means for maintaining the scientific position of statistical and economic science?' the Council of the Statistical Society has not thought it necessary to come to any resolution. It is practically answered by the answer to the first question. The more the Statistical Society does to effect the object for which it was founded, the better it will maintain the position of statistical and economic science, and the continuance of Section F in the discharge of its proper functions will answer the same end.

"'We are, Sir,

"'Your obedient Servants,

"'R. Giffen,
"'Hammond Chubb, } *Secretaries.*

"'Dr. Farr, F.R.S.

"It has not been deemed right to consult all, but a letter from Mr. Chadwick, one of the past presidents of Section F, is annexed. He points out the importance of joining to the sections of abstract science, which few can take part in, sections which open questions for discussion of local and popular interests, in order to realise the required funds at the provincial meetings, on which the success of the Association to some extent depends.

"It has been brought under the notice of the committee that no reports on the progress of statistics have been published, and that no statist or economist has ever been elected president, or been called upon to deliver addresses. That is true; but several of our leading statesmen have been presidents of the Association, and it was quite right that the physical sciences, which as they involve simpler elements, have attained greater perfection, and have been cultivated by men of the highest order of scientific mind, should have the precedence; but the day will probably come when some distinguished statist, sociologist, or professor of political economy, may be called upon by the Council to occupy the post of president. No one will probably deny that an address by John Stuart Mill, by Herbert Spencer, or by others that could be named in their day, would have been as interesting as some of the eloquent orations the Association has listened to.

"There is one peculiarity about Section F apparent on the face of a table that has been submitted to us. While Section F has by its popularity brought in many members, it has taken out very little from the funds of the Association; for instance, the grants for statistical investigations have in the whole term of years been 1,855*l.*, while 1,500*l.* have been expended on the explorations of Kent's Cavern alone. There is another peculiarity of the section, that its inquiries touch nearly the interests and feelings of the working classes, which the Association has ever considered. At Belfast the papers and discussions in Section F were so fortunate as to put a stop to a disastrous strike; and on this ground the fame of the British Association rang through all Ireland. There is besides the peculiarity about Section F, that it deals with positive, observed, important facts; in other sections this is not always so; and, finally, it never in any way offends the religious prejudices of the nation. The services of Section F in Ireland were a very striking set-off against the excitement produced by the bold utterances of the physical and biological sections.

"At this stage the committee submits the facts, and leaves the Council to decide whether it is not desirable to watch the operation of the new regulations they have made for the conduct of the sectional business, before they take any further steps affecting Section F or any of the other sections."

II.—*Russian Financial Statistics.*

We extract from the *Times* of the 22nd August, the following review of the *Annuaire*, issued by the Russian Ministry of Finance

for the year 1876. This *Annuaire*, as will be known to several members of the Statistical Society, is compiled by M. A. Vessélovsky, who was one of the secretaries of the International Statistical Congress at Buda-Pesth:—

"If Russian finance is not well understood, it is hardly for the want of statistics during the last few years. Not only are there publications of details from week to week and month to month of the receipts of Customs revenue, the imports and exports, the railway traffics, the accounts of the Imperial Bank, and the accounts of the joint stock banks and other institutions of credit, but, among more permanent publications, there are ample statistical volumes relating to the foreign trade, various works on the agricultural and miscellaneous industries of the Empire, annual reports by the Controller of the Finances on the accounts and budgets of the State, and last of all, an *Annuaire des Finances Russes*, the issues of which have now been made, not quite regularly, for a period of five years, and of which the last issue appeared two or three months ago, containing a fairly complete statistical view of the finances and financial resources of the Empire for the year 1874. So far, indeed, from being backward in statistics, the Russian administration would be surprised at being thought to hold any but the first place. They admit the defectiveness of their data in many respects, especially as respects population, and the leading statisticians in Russia are engaged at the present moment in preparations for a really scientific and complete census, but in other respects Russian statisticians would hold themselves second to none, and really show no little skill in collecting and digesting statistical data relating to their Empire. The last publication we have noticed, the *Annuaire des Finances Russes*, is a specimen of their skill. It deals not only with what we are accustomed to consider State finance—that is, the budgets and accounts of the Government—but with the banks and other credit institutions, the railways and telegraphs, the redemption of the peasant properties, and other matters, all which would hardly be dealt with in a work on State finance in England, but for which there is more excuse in Russia on account of the way the administration is mixed up with every species of private enterprise. On several of the subjects, as, for instance, with regard to the Imperial budget and accounts, there are later figures accessible than these here given. We have here only the Controller's Report on the accounts for 1874, whereas the Report for 1875 has been issued in a separate form, but for certain purposes a difference of a year or two is unimportant, and in the present volume there are certain details which have not yet been elsewhere published for a later year.

"We propose, then, to review Russian finance with the help of the present official figures. Beginning with the Imperial accounts, we need not dwell at all on the general totals of revenue and expenditure. As we have already stated, there are later figures issued, and, as is well known, the Russian financial position has lately been that, apart from the special outlay on 'railways,' there has been a moderate surplus. Let us, in passing, mention that we

convert the rouble throughout at 2*s.* 6*d.*, that being a convenient divisor. Previous to the present war the current rate of exchange with England was usually 2*d.* or 3*d.* higher; but since then it has been for some time 5*d.* to 6*d.* less than the rate we have assumed. The fluctuations of the exchange are a most serious mechanical difficulty in explaining the finances of a country with an inconvertible paper currency. We only note *pour memoire* that the general figures for 1874 are: Receipts, 69,717,000*l.*; expenditure, 67,917,000*l.*; showing a surplus of about 1,800,000*l.*; that the principal branches of revenue are the excise on alcoholic liquors, yielding 25,099,000*l.*; the customs, yielding 7,049,000*l.*; and the direct taxes (personal and land), 11,868,000*l.*; and that the principal branches of expenditure are: Public debt, 11,730,000*l.*; Army, 21,559,000*l.*; Navy, 3,278,000*l.*; Finance Ministry, including collection of taxes, 12,545,000*l.*; Ministry of Roads and Communications (chiefly for railways), 2,820,000*l.*; Ministry of Interior, 5,614,000*l.*; and Imperial Household, 1,499,000*l.* In other words, allowing for the expenditure in collecting the taxes, which is very large, it would appear that Russia is a country with a free revenue of about 57,000,000*l.*, very largely derived from the excise on alcohol; that a good deal more than a third of this free revenue, viz., about 25,000,000*l.*, is spent on the Army and Navy; that, of the remainder, about 12,000,000*l.*, goes for the debt; and that only 20,000,000*l.* remains for all the other purposes of a Government which has to administer the affairs of upwards of eighty millions of people. Such is the general outline of Russian Imperial finance in a normal year, apart from the special outlay on railway works and the questions of guarantees and indirect liabilities. What we wish to dwell on here are certain details supplied by the present volume, and not usually to be found in the summaries of the accounts and budgets.

"Among the most important of these details appears to us to be a statement of the receipts and expenditure in each province of the vast area to which the name of the Russian Empire is given. We are apt to run away with the idea that as an effective unit of force Russia is an empire of 80 millions of people, the surplus resources of which may all be applied in any one direction. The actual fact is that there is a central nucleus of about 50 millions, to which the remaining portions of the Empire are suckers, and not feeders. The unit of force of Russia is thus the producing capacity of about 50 millions of people, minus whatever is drawn from them by the outlying parts of the Empire; it is only the surplus which these 50 millions can produce, minus the deduction referred to, which is available for any special enterprise. All this appears very clearly on looking at the receipts and expenditure per province. Excluding the capital, where there may be legitimately enough a large outlay for the general purposes of the whole Empire which cannot be considered precisely a drain upon it, there are at least thirteen Governments or provinces out of eighty-three in Russia in which the expenditure exceeds the outlay by 51,000,000 roubles, or over 6,000,000*l.* These provinces or Governments are—

	Receipts.	Expenses.	Deficiency.
	£	£	£
Amour	24,000	140,000	116,000
Bakou	290,000	375,000	85,000
Warsaw	2,384,000	3,393,000	1,009,000
Wilna	578,000	882,000	304,000
Trans-Caucasus	599,000	3,388,000	2,789,000
Irkutsk	637,000	773,000	136,000
Kazan	1,129,000	1,380,000	251,000
Olonetz	187,000	280,000	93,000
Orenburg	493,000	595,000	102,000
Maritime Province	63,000	162,000	99,000
Stavropol	815,000	1,218,000	403,000
Turkestan	369,000	1,081,000	712,000
Finland	24,000	302,000	278,000
Total	7,592,000	13,969,000	6,377,000

"The magnitude of the deficiency in the Trans-Caucasus and Turkestan will not fail to be noticed, while it will also be noticed that the Caucasus and Central Asia absorb more than what is entered under the head of Trans-Caucasus and Turkestan—the deficiencies of the Baku and Stavropol provinces falling clearly to be included with those of the Caucasian region, and the deficiency of Orenburg falling to be included with that of Turkestan. The Caucasus and Central Asia together are, in fact, a drain upon the Russian nucleus to the extent of 4 millions sterling annually, and their resources are in no way an addition to those of the central region. The deficiency on account of Poland is, perhaps, not so great as might have been expected; but Poland is one of the richest provinces naturally, and but for the antagonism of race would be a real addition to the strength of the Empire. It may also be allowed that to some extent a Russian army stationed in Poland may be considered as stationed on the western frontier, and the expenditure on it is an application of the resources of the central nucleus for the purposes of ordinary defence, and not a mere wasteful drain. In an economic view, however, the Caucasus and Central Asia are a serious drain without any qualification upon the resources of Russia proper, with its small free revenue.

"The tables before us also show that the principal surplus revenue of Russia is received, almost exclusively, from the provinces or Governments of Central and Southern Russia.

	Receipts.	Surplus over Expenditure.
	£	£
Moscow	4,931,000	1,611,000
Koursk	1,264,000	1,012,000
Podolia	1,415,000	897,000
Kiev	2,070,000	788,000
Catherinoslav	1,535,000	1,091,000
Voronej	1,420,000	877,000
Saratov	1,498,000	1,080,000
Tambov	1,495,000	1,090,000

"It is from these and the adjacent provinces of Central and Southern Russia, constituting the nucleus of Russian power, that the revenues are drawn which are consumed in the Caucasus and Central Asia, and to a less degree in Poland and Finland. There are also tables showing the amounts of the direct (personal and land) taxes received in each province, and the amounts of the revenue on alcoholic liquors received in each, confirming in every way the above information as to the seat of the Russian resources and the places where they are largely expended. The details might not be without interest, as showing the real extent of the Russian nucleus, for provinces in which there is only a very small surplus would count for very little; but there is so much matter in the book that we must pass on to other points.

"A great deal of information is given about the Russian railway system and the financial connection of the Government with it. At the end of December, 1874, there were 16,935 versts (over 10,000 miles) of railroad in operation, or 2,000 versts more than at the end of the previous year, and the gross income of this system in 1874 was 17,666,000*l.* (about two-thirds from goods), working expenditure 11,088,000*l.*, and net revenue 6,578,000*l.* The working expenditure is very high, being 63 per cent. of the gross receipts, but this is not an unreasonable figure in a newly opened-up country, and the net revenue is considerable enough to be the nucleus of a good property. It is not *primâ facie* likely that if the Russian Government is deeply interested in such property, it will thereby be brought into great financial embarrassment. It is interested in the property in various ways. It has, first of all, guaranteed the interest on the obligations and shares of certain companies which these companies had directly issued. We do not observe in this volume any statement of the annual amount of such guarantees, though the amount is no doubt considerable, but there is a distinct statement that at present the payments which the Russian Government has to make under the guarantees are inconsiderable. The total amount so paid in 1874 was 5,096,816 roubles, or about 637,000*l.*; and although this was an unusually small amount, still the sum in 1873 had only been 1,436,000*l.*, and in 1872 1,910,000*l.* Altogether the amount so advanced and remaining outstanding up to the end of 1874, from the commencement of the Russian railway system, is 15,183,000*l.*, which can hardly be considered an excessive sum, and has not by itself burdened the Russian Exchequer heavily. The Russian Government has next of all made advances to the companies in other ways than by payments under guarantees out of its annual revenues, or other funds, exclusive of those special resources and loans which have been raised for railways. Its advances of this nature altogether amounted at the end of 1874 to about 11,750,000*l.* Lastly, it has made advances out of special funds, principally the consolidated railway loans of the last few years, partly in exchange for the shares and obligations of the railway companies, a portion of which it has realised. In this way the State was a creditor of the companies at the end of 1874, exclusive of the shares and obligations it had received and realised, to the extent of 28,000,000*l.*, its realisa-

tions having amounted to about an equal sum. Altogether the Russian Government at the end of 1874, between what it had paid in guarantees and its advances from the general funds of the Treasury and from loans, had a sum of over 50,000,000*l.* 'out' in railways, and during the last two years this amount must have been largely increased, another large loan having been raised early in 1875. To a certain extent its position as creditor is so far not unfavourable. Its guarantees, as we have seen, have not involved it in any great annual charge, and although the capital of the railway loans is not included in the 'Public Debt' statement, the interest on these loans, amounting in the budget of 1876 to 3,534,000*l.*, is included, so that the moderate surplus in Russian finance is reckoned after paying that interest. In point of fact, also, the Russian Government receives for the service of interest on these loans about 2,000,000*l.* a-year, this being one of the items of receipt in the budget, so that the amount it is annually out of pocket in connection with its direct advances would appear to be only 1½ million sterling, in addition to the amount it is out of pocket in respect of guarantees. We confess, however, that there are in our view one or two weak points in this system which would easily be productive of temporary embarrassment, and behind which there may lurk more mischief than is apparent on the surface. The advances to the railway companies are an increasing amount. The total from special resources, *i.e.*, from loans, amounted in 1874 to about 7,500,000*l.* What is to hinder that these advances are not represented by actual outlays in the construction and improvement of the property, but are simply loans which enable the companies to meet the interest on the shares and obligations? In this way the companies guaranteed by Government may go on without having recourse to the guarantee, and the companies owing it interest may appear to pay it that interest; but in reality what may happen is, that the Government advances a sum in both cases, becoming a creditor for the amount, and this sum enables the company to pay the interest to itself, which figures as a receipt in the budget, or to pay the interest which the Government has guaranteed. If this has been the case to any extent—and we believe there have been applications to the Russian companies for advances, which were merely to enable them to maintain their credit—then the situation of the Russian Government as regards the railways cannot be quite so good as it is apparently on the surface. Its real liability under the guarantees may be greater than the amounts lately entered in its accounts as actually paid, and the companies directly indebted to it may pay it less out of their own revenues than they seem to have paid. The possible annual burden which may thus be concealed in the Russian accounts cannot, however, exceed more than 2 or 3 millions, and this in time of peace would not be fatal to Russian finance, while we doubt if so much is concealed. Of course these indirect liabilities of the Russian Government are liable to be increased like its direct liabilities by a great fall in the exchange, such as the present war has produced, and this will tend to increase the momentary embarrassment. On the other hand, the position of the Russian Govern-

ment, as a creditor of its railway companies, will be a source of revenue to it which may become very valuable, as the railways are themselves developed.

" In another way the Russian Government is deeply interested as a debtor and creditor, viz., as the real obligant upon bonds granted to the landowners on behalf of the peasants for the redemption of peasants' properties, and as the creditor of the peasants for an equivalent amount of principal and interest. The debt of the peasantry on this account amounted, on 1st January, 1875, to 83,135,000*l.*, and the State was virtually bound for an equivalent sum, the annual interest and amortisation amounting to about five millions sterling. In many places, it is believed, the peasants only pay their taxes and the annual sums they owe for redemption with difficulty. The one payment competes with the other. Failure in paying the interest will obviously be the same thing to the State as a falling off of revenue. As yet the arrears of the peasants in their payments to the State are very small, amounting to 15,110,532 roubles, or about 1,889,000*l.* at the end of 1874; while the amount of these arrears in 1874 was rather diminished than increased; but an unprosperous year in Russian agriculture would easily make a difference. The matter is always one to be considered in Russian finance along with the figures of the revenue and expenditure of the State. It involves a contingent liability which has not yet brought the State into any embarrassment, but which may prove important.

" A large space in the present volume is given to the statistics of banks and other credit institutions, the *Annuaire* on this head showing a great advance upon its predecessors. As a note in the preface informs us, the tables in this division now ' comprise the operations of 50 joint stock banks, including 11 of ' crédit foncier,' and the operations of 10 establishments of mutual ' crédit foncier,' and the operations of 72 societies of mutual ' crédit mobilier,' and of 235 communal urban banks.' With these statistics and the addition of those of the Imperial Bank of Russia, we are enabled to see at a glance what is the floating capital of the country, and estimate, however imperfectly, in connection with the other statistical data available, the extent of the undertakings that capital is capable of supporting. As regards the Imperial Bank, little need be said, as the accounts of that bank are published weekly and monthly, and are more or less familiar. One branch of its business is to manage the inconvertible currency for the direct account of the Government. The issue of notes in 1874 was 797 million roubles, about 99,625,000*l.*, against which the cash held was 230 million roubles, about 28,850,000*l.*, leaving a net uncovered circulation of rather more than 70 millions sterling, which is still about the amount, although meanwhile the gross issue and the cash held have each diminished about 10 millions sterling. The circulation appears by no means excessively large for a country of the extent of Russia. The bank also manages on account of the State the business of the redemption of the peasant properties, and of other mortgages on real property. The bank receives payment from the debtors on the one side, and pays the interest of the

obligations on the other, its functions, however, being manifestly that of an intermediary only. As the result of these operations, the Treasury was directly indebted to the bank at the end of December, 1874, in about 15,000,000*l.*, the debt having been reduced by about half-a-million in the course of the year; but the contingent debt of the Government, as above explained, was of course much greater. As regards what we may consider its proper banking business, the situation of the bank at the end of December, 1874, showed its liabilities to be—capital and reserve, 2,625,000*l.*; accounts current and deposits at interest, 26,984,000*l.*; public deposits, 3,783,000*l.*; accounts current (private) not at interest and special accounts current, 3,427,000*l.*; other liabilities, including 4½ millions by branches to the bank, 10,471,000*l.*; total, 47,290,000*l.* The bank has thus, in round numbers, exclusive of its own capital and of the cross entries with its own branches, about 40 millions of public money to employ. Nearly 15 millions of this amount are used in the business of redeeming the peasant properties and similar operations above referred to, rather more than 6 millions are represented by cash and notes, and about 20 millions are employed in discounts and advances of various kinds, two-thirds of this last business being done at the branches, and only about one-third at St. Petersburg.

"The joint stock banks of Russia are less known, as they are, indeed, of comparatively recent creation, almost all having been founded within the last ten years. Exclusive of the banks of *crédit foncier*, they are 39 in number; 6 are classed as belonging to St. Petersburg, 6 to Moscow, 13 to the Provinces of the South, 7 to the Provinces of the East, and 10 to the Provinces of the West, making nominally 42; but two of them are entered in more classes than one on account of their great extensions. Some of them are of considerable importance, such as the Bank of Volga-Kama, which has 2 millions of deposits in the Eastern Provinces and 2 millions at St. Petersburg, and the aggregate liabilities are—capital and reserve, 13,546,000*l.*; deposits, 37,290,000*l.*; other liabilities, including 12,802,000*l.* to correspondents, 23,576,000*l.*; total, 74,412,000*l.*

"Allowing that the other liabilities may be made up a good deal by cross entries, the banks have still 13½ millions of their own money and 37 millions of the money of the public, or about 50 millions in all, to employ. The amount is represented by the following assets:—

	£
Cash	1,250,000
Deposits at the Bank of Russia	2,483,000
,, in private establishments	602,000
Discounts	27,222,000
Advances on securities guaranteed by State	6,689,000
,, ,, not guaranteed	7,448,000
,, merchandise	2,305,000
Discounts of promissory notes with security	2,313,000
Other assets, including 16,000,000*l.* due by correspondents	24,100,000
Total	74,412,000

"Disregarding the other assets as consisting very largely of cross entries, and also omitting the cash and deposits at the other banks, we have thus about 46 millions employed by these banks in discount and advances of various kinds—about 14 millions on securities, which are no doubt for the most part those of the railway companies, and the remainder, we assume, mainly in commercial business. The deposits and capital together, added to those of the Imperial Bank, constitute a fund of about 90 millions. It will be understood, of course, that this fund, like other banking funds, must be to a large extent the creation of the loans on the other side. The loans practically could not be called in and the money otherwise employed. So large a fund implies, however, that there is probably a constantly accruing surplus available for new investments. Some of the advances are no doubt paid off from time to time out of savings, and the sums thus repaid to the banks are available for wholly new enterprises. If we were to judge by an English standard, too, so large an amount of deposits would indicate in ordinary years a potential credit which would almost be as useful for new enterprises as actual money. But the above figures seem to show that the Russian banks have stretched their credit to the utmost. The amount of cash they hold is singularly small in proportion to their liabilities, that of the Imperial Bank being little more than 10 per cent., and that of the other banks, including their deposits with the Imperial Bank, being only about 8 per cent. Banks in such a position have very little margin, and could not afford to place additional amounts to the credit of their customers at the risk of these amounts being drawn upon. The wonder is that if Russian banks in the aggregate were in the above position at the end of 1874, the failure of a bank at Moscow, in consequence of the Strousberg collapse the following year, did not lead to some more serious disasters.

"These Russian banks, it may be added, have been tolerably profitable. The net profits of the Imperial Bank in 1874 were nearly half-a-million sterling, and in addition to considerable amounts added to reserve, the following sums and average rates of dividend have been paid since 1865 by the other joint stock banks:—

Year.	Dividends.		Year.	Dividends.	
	Amount Paid.	Average Rates.		Amount Paid.	Average Rates.
	£	Per cnt.		£	Per cnt.
1865	26,000	8⅓	1870	320,000	13⅓
'66	51,000	10¼	'71	537,000	13
'67	76,000	11½	'72	948,000	12⅕
'68	89,000	13⅓	'73	1,051,000	9⅕
'69	148,000	13¼	'74	1,212,000	9⅓

Thus the amount paid in the shape of dividend has steadily increased, but the rate of dividend in consequence of the greater proportionate increase of capital has declined during the last years.

"We need describe less minutely the facts as to the other credit

institutions, as it is obvious none are so important to a country as the ordinary deposit and lending banks. The companies of mutual 'crédit mobilier' comprise 44,925 members, have a capital guaranteed, but apparently not subscribed, of 26,000,000*l.*, and employ about 13½ millions sterling of deposits. The urban commercial banks, with rather more than two millions sterling of capital, also hold about 13½ millions of deposits. The joint stock 'crédit foncier' banks, ten in number, as above stated, appear to have made altogether about 13 millions sterling of advances in the year ending 1874, principally in 1873 and 1874, a large part of this money having no doubt been borrowed abroad. The institutions of 'crédit foncier mutuel' have had but unimportant transactions. The Imperial Bank and the joint stock deposit banks were thus by far the most important factors in the credit system of Russia up to the end of 1874. The 'crédit foncier' institutions, judging by the loan operations in Western Europe, have increased their transactions since then, but their transactions are of a kind which shows not so much the internal resources of the country as the limitation of these resources, which compels a resort to foreign countries for the special purpose of obtaining advances on landed property. The amount of the advances made by these institutions has to be considered in connection with the direct national borrowings abroad, and with the similar borrowings by the railway companies, as an addition to the influences which make the exchange adverse to Russia when the borrowings abroad are from any cause suspended. The so-called savings banks in Russia are also unimportant, the total deposits at the end of 1874 being only about 600,000*l.*

"We trust we have given our readers some notion of the contents of this volume of Russian statistics, though it would be impossible to do justice to it without going into somewhat wearisome detail. It should be understood especially that the traffic and expenses of every separate railway are shown, and the accounts in detail, not only of the Imperial Bank, but of every one of the thirty-nine joint stock banks we have referred to. There is consequently no lack of detail for those who care to investigate the matter minutely, and the facts assist materially in forming a complete view of the economic condition and resources of Russia."

III.—*English Railways in* 1876.

We make the following extracts from the last Annual Report to the Board of Trade on the Capital, Traffic, and Dividends of English Railways, viz., for the year 1876. The report is in continuation of Captain Tyler's well-known reports, and is signed this year by Mr. Calcraft, Assistant Secretary, Railway Department, and Mr. Giffen, Chief of the Statistical Department, Board of Trade:—

Railway Extension.

"Table No. 1 exhibits the mileage of railways open for traffic in the United Kingdom and its principal divisions at the end of December, 1876, as compared with similar totals for several previous years. The total mileage for the United Kingdom in 1876 was 16,872 miles, including 11,989 miles for England, 2,726 miles for Scotland, and 2,157 miles for Ireland. The increase for the United Kingdom over the total in 1875 is 214 miles, which is much the same amount of increase as in 1875 over 1874. The percentage of increase is in both cases about 1·3 per cent., which is a small rate of increase as compared with what has often been witnessed, and much smaller than the rate of increase in 1874 and one or two years just previous. Almost the entire increase in 1876 has been in England and Wales, the increase in Scotland being 5 miles only, and in Ireland 9 miles.

"The increase of double mileage is greater than the increase of the whole mileage. Of the above total of 16,872 miles the number of double miles was 9,169, and of single miles 7,703; and, comparing these with the corresponding details for 1875, we find that while the increase of double miles has been 271, there has been a decrease of 57 miles in the single mileage. In the absence of information on this point from the respective railway companies, it is impossible to say whether the increase of double mileage is due for the most part to absolutely new constructions, or to the conversion of existing single mileage into double mileage. But it is evident from the increase of double mileage exceeding the increase of the whole mileage that the latter process is going on to some extent, and probably, it is believed, to a considerable extent. At the same time, the similar process of lengthening sidings, and converting double into treble or more lines, is going forward, as we may infer from the fact that, while the addition to the mileage of railways in 1876 was only 1·3 per cent., the percentage addition to the capital, as will presently be noticed, was considerably greater.

Capital.

"The total nominal capital of the railways at the above date in 1876 was 658,214,776*l.* As compared with the total on the corresponding date in 1875, viz., 630,223,494*l.*, there is an apparent increase of 27,991,282*l.*, or about 4·4 per cent. A portion of this increase is only nominal, nearly 8 millions of it being due to an increase of the nominal capital of the North British and Caledonian Railways in connexion with conversion operations. Still, making a deduction on this account, the remaining increase of about 20,000,000*l.* amounts to 3·1 per cent., which is a considerably higher rate of increase than that of the mileage open for traffic, and so far confirms the suggestion that a considerable part of the increased capital of railways is expended on lines already open for traffic. A comparison of the total capital per mile of railway open for a series of years shows this very clearly.

Years.	Capital per Mile of Railway Open.
	£
1871	35,943
'72	35,984
'73	36,574
'74	37,078
'75	37,833
'76	39,012

" Assuming that these figures—apart from variations in particular years, in consequence of an increase of nominal capital through conversion operations on one side, or in consequence of the issue of shares and stocks at premiums on the other side—represent approximately the real capital expended, it cannot be doubted that there is a steady increase of the capital cost per mile of open railway in the kingdom. As has been pointed out by Captain Tyler in his reports, there is a sufficient reason for an increase of this sort in the addition of sidings and other accommodation to existing lines to meet the increasing traffic.

" The principal part of the nominal as well as nearly the whole amount of the real increase in the capital in 1876 is in the guaranteed and preferential as distinguished from the ordinary share capital, and in the loans and debenture stock. Carrying the comparison a few years back, it would seem that the ordinary capital of railway companies, although it is swollen to some extent by nominal additions, is nevertheless increasing very slowly in comparison with the guaranteed and preferential capital and the loan and debenture capital. In 1870 the ordinary capital of the companies was 229,282,150*l.*, so that the increase in 1876 to 262,008,883*l.* amounts to 32,726,733*l.*, or about 14·3 per cent. In the same period, however, the guaranteed and preferential share capital increased from 158,692,084*l.* to 228,907,992*l.*, an increase of 70,215,988*l.*, and about 44·2 per cent.; and the loans and debenture stock increased from 141,934,430*l.* to 167,297,901*l.*, an increase of 25,363,462*l.*, and about 17·9 per cent. Even, therefore, if we make no allowance for that portion of the increase of ordinary capital which is only nominal, it would seem that its increase is considerably slower than that of the other classes of capital. The proportion to the whole capital of railways is consequently diminishing. While it constituted in 1870 about 43 per cent. of the capital, its proportion in 1876 was only 40 per cent. On the other hand, while the proportion of loans and debenture stock to the whole capital has slightly diminished in the same period, there has been a considerable increase in the proportion of guaranteed and preferential capital, viz., from 30 to 35 per cent. It has to be remembered besides that a considerable portion of the above ordinary capital, being the capital of lines leased by other companies, might more properly be classed as guaranteed or preferential, so diminishing the proportion of capital invested in railways which is not in some form or other guaranteed.

" In the annexed Table 2, no separation has been made between 'Loans' and 'Debenture Stock' as has been done in former

years, but the two have been classed together. It may be stated that a main reason for this is that the item of 'loans,' which has been decreasing of late years, has now been reduced to a comparatively small amount. The total is now only 32,552,415*l.* out of the above sum of 167,297,901*l.* of loans and debenture stock together, the reduction effected in 1876 alone having been about 8,000,000*l.* The transformation of 'loans' into 'debenture stock,' which has been going on for some years, is thus approaching its completion, and the danger to railway finance from the existence of a large floating debt has to all intents and purposes disappeared. In addition, many of the companies have effected a considerable economy by issuing their debenture stocks at lower rates than the average rates of interest on their loans.

Rates of Interest and Dividend.

"Tables 3, 4, and 5 exhibit the results to the capital invested in railways in 1876 as compared with previous years. The most general facts are, that the total receipts were 62,215,775*l.*, an increase of 978,775*l.* over the previous year; the working expenses were 33,535,509*l.*, an increase of 314,781*l.* over the previous year; and the net earnings were 28,680,266*l.*, which is an increase of 663,994*l.* In consequence of the increase of capital, however, the percentage of the increased net earnings to the total share and loan capital is rather lower than it was the year previous, being 4·36 as compared with 4·45 per cent., but this falling off is also subject to the observation already made as to the increase of nominal capital. Altogether, neither in the net earnings from railway working alone, nor in the net earnings from all sources, was there any material change in the position of the companies as compared with the previous year. The net earnings, as will be seen, are still rather smaller in proportion to the whole capital than they were in 1872 and 1873, when they amounted to 4·52 and 4·35 per cent. respectively, for the railway working alone, and to 4·74 and 4.59 per cent. for the whole working; but in amount they have greatly increased since those years, their proportion to capital being kept down by the large simultaneous increase of capital.

"The tables above referred to also show very fully the amounts and rates of interest or dividend paid on the various descriptions of capital; the figures here used, however, being in the aggregate somewhat larger than the true totals, in consequence of the investments by some companies in the stocks and shares of other companies, so that the same interest payment, or dividend has to be computed twice over. The total interest and dividend thus appears as 29,224,083*l.*, or in the proportion of 4·44 per cent. on the total capital, as compared with the above sum of 28,680,266*l.*, being the net earnings from the whole working of railways, which is in the proportion of 4·36 per cent. But the difference thus arising is inappreciable for the purpose in view, which is to compare amongst each other the returns obtained by the various descriptions of capital.

"Of this total of 29,224,083*l.*, then, it appears that the sum of 7,124,511*l.* was paid to 'loans and debenture stock,' an increase of

167,000*l.* as compared with the previous year, but the proportion to the 'loan and debenture capital' remaining the same, viz., 4·26 per cent. The sum of 10,259,719*l.* was paid to the guaranteed and preferential capital, this being an increase of 625,000*l.* as compared with the previous year, but the proportion to the guaranteed and preferential capital falling from 4·54 to 4·48 per cent.—partly, no doubt, in consequence of the merely nominal additions to the capital which have been made. The payment to the ordinary capital, however, shows a falling off in the amount as well as in the proportion, as compared with the previous year, the reduction in amount being from 12,018,009*l.* to 11,839,853*l.*, and in proportion to ordinary capital from 4·72 to 4·52 per cent. This last reduction is, no doubt, partly apparent only, as part of the increase in ordinary capital has been nominal only; but the reduction is real, at least to the extent that the amount paid to the ordinary shareholder has been diminished. The ordinary shareholder receives on the average rather a better dividend than the holders of other railway capital.

"To throw light on the question of the proportions of the different descriptions of capital receiving interest or dividend at different rates, we subjoin the following detailed comparison:—

Statement of the Rates of Interest and Dividend Paid on the undermentioned Ordinary, Guaranteed, and Preferential Capital, and Loans and Debenture Stocks for the Year 1876.

Rate of Interest or Dividend.	Ordinary.		Guaranteed.		Preferential.		Loans and Debenture Stock.	
	Amount of Capital.	Per Cent. of Total.	Amount of Capital.	Per Cent. of Total.	Amount of Capital.	Per Cent. of Total.	Amount of Capital.	Per Cent. of Total.
	£		£		£		£	
Nil	38,892,510	14·8	43,690	0·1	9,095,388	6·1	372,566	0·2
Not above 1 pr. cnt.	12,916,914	4·9	—	—	24,770	—	—	—
Above 1 and not over 2 pr. ct.	4,296,158	1·6	101,180	0·1	5,478,233	3·7	135,531	0·1
2 „ 3	9,970,842	3·8	2,824,234	3·5	1,276,311	0·9	567,417	0·3
3 „ 4	26,864,038	10·3	18,930,686	23·4	21,294,732	14·4	100,971,553	60·4
4 „ 5	26,751,213	10·2	48,363,013	59·9	106,844,656	72·1	62,304,521	37·2
5 „ 6	70,210,846	26·8	7,319,251	9·1	3,128,530	2·1	2,915,113	1·8
6 „ 7	44,686,124	17·1	2,334,444	2·9	229,361	0·2	—	—
7 „ 8	21,050,549	8·0	680,570	0·8	297,500	0·2	31,200	—
8 „ 9	537,918	0·3	—	—	64,000	—	—	—
9 „ 10	885,326	0·3	184,603	0·2	229,840	0·2	—	—
10 „ 12	4,916,445	1·9	2,000	—	165,000	0·1	—	—
12 „ 13	30,000	0·0	—	—	—	—	—	—
Total	262,008,883	100·0	80,779,671	100·0	148,128,321	100·0	167,297,901	100·0

"From this it appears very clearly, we think, that while the bulk of the capital in each case receives about the average dividend, the average is lower in the more secured capital, and is highest of all in the ordinary as regards the capital receiving dividend, but in the latter there is also a much larger proportion of capital either

receiving no dividend or a very small one. The extremes are thus greatest in the latter case, although on the average the result is better than the average of the remaining capital.

Traffic, Working Expenses, and Revenue.

"The remaining tables annexed contain numerous details as to the traffic, working expenses, and revenue of the railway companies, of which we have already stated the broad results. The tables have been compiled for the convenience of those interested in the subject, and it would be out of place here to introduce any elaborate comment; but it may be useful to call attention to one or two of the more prominent points in these details.

"The increase of receipts apparently is divided in pretty equal proportions between the passenger and goods traffic.

"The receipts from passenger traffic amounted to 26,163,551*l.*, or 448,870*l.* more than in 1875.

"The receipts from goods traffic amounted to 33,754,317*l.*, or 486,245*l.* more than in 1875.

"The goods increase is rather the largest in amount, but the percentage of increase is no greater, owing to the larger amount on which the increase has occurred. It appears, however, that these results have been obtained along with a larger proportionate increase of passenger-train mileage than of goods-train mileage.

"The passenger-train mileage was 105,919,000 miles, or 5,188,000 miles (being 5 per cent.) more than in 1875.

"The goods-train mileage was 106,139,000 miles, or 1,504,000 miles (being $1\frac{1}{3}$ per cent.) more than in 1875.

"The receipts per train-mile from passenger traffic have accordingly fallen from 60·06*d.* in 1875 to 58·63*d.* in 1876, while the receipts per train-mile from goods traffic have increased from 75·32*d.* to 75·78*d.* The increase in the passenger traffic has thus, in all probability, not been beneficial in the way of an increase of *net* earnings to the railway companies, the increase of 5 per cent. in the working being far more than double the percentage increase of passenger receipts. The increase in goods traffic would, on the other hand, be profitable, being accompanied by a comparatively small increase in the working. No doubt the increase of working expenses as above-mentioned has been very small in amount, and has certainly not been in proportion to the increase of train-mileage; but the smallness of the increase must be due to the diminution of the cost of working from other causes, but for which the additional train-mileage would, no doubt, have added in some degree to the cost of working.

"An analysis of the increase of passenger traffic would seem to account for the addition to the working which has been necessary. It is almost exclusively an increase of third-class traffic, the receipts from both first and second-class passengers, though not from other sources, having declined.

"The receipts from first-class in 1876 were 4,566,271*l.*; 1875, 4,725,506*l.*; decrease, 159,235*l.*

"The receipts from second-class in 1876 were 3,659,116*l.*; 1875, 3,842,592*l.*; decrease, 183,476*l.*

"The receipts from third-class in 1876 were 13,615,961*l.*; 1875, 12,985,829*l.*; increase, 630,132*l.*

"The receipts from season tickets in 1876 were 1,216,383*l.*; 1875, 1,151,248*l.*; increase, 65,135*l.*

"The receipts from excess, luggage, &c., in 1876 were 3,102,590*l.*; 1875, 3,009,060*l.*; increase, 93,530*l.*

"The pressure of the times, or other causes, has thus taken from the first and second-class traffic, and added to the third-class traffic, for the accommodation of which traffic more trains than formerly have apparently been required. In any case whatever may be the cause of the increase of passenger-train mileage, the magnitude of the increase cannot but have neutralised to the railway companies the increase of receipts from that traffic; and if that cause has not been the additional accommodation requisite for the great increase of third-class traffic, it would be for those interested to endeavour in some way to account for the increase.

"It might have been possible to throw more light on this point, if the companies gave returns of the numbers of the different classes of passengers carried one mile; but, in the absence of such returns, the facts as to passenger journeys would seem to support the inference that the increase of third-class traffic on railways has added greatly to the amount of the working.

"First-class passenger journeys in 1876 were 44,859,066; in 1875 were 43,708,886; increase, 1,150,180.

"Second-class passenger journeys in 1876 were 66,478,195; in 1875 were 70,525,171; decrease, 4,046,976.

"Third-class passenger journeys in 1876 were 426,950,034; in 1875 were 392,741,177; increase, 34,208,857.

"Thus the third-class passenger journeys have increased about 9 per cent., while first-class passenger journeys have increased very little, and second-class passenger journeys have largely decreased. Passenger journeys are, no doubt, a most incomplete test, but, taken in connection with all the circumstances, the facts concerning them appear to corroborate the probability of the great additional work thrown on the railway companies by the increase of their third-class traffic at the expense of the other classes. It is a curious circumstance that there is an increase of the first-class passenger journeys along with a decrease of the receipts. Possibly this may be partly due to a disproportionate increase of short journeys; but, so far as such an increase is not the occasion of the change, the falling off in the receipts would be due to a lowering of fares. The special decrease of second-class passenger receipts and journeys is, perhaps, partly due to the continued effect of the abolition of second-class carriages on the Midland Railway system—the decrease in the journeys being almost exclusively in England and Wales, and not in Scotland and Ireland. But this cannot certainly be affirmed, as the Midland change had been in operation all through 1875. In Scotland it may be noted, contrary to the experience of both England and Ireland, there has been in 1876 an increase of both first-class passenger receipts and journeys.

" The pressure of the times has been referred to as a main cause of the falling off in first and second-class passenger receipts as compared with those from third-class passengers. In former periods of depression a similar phenomenon has been observed. It is evident, however, that, one year with another, third-class traffic increases faster in proportion than either first or second-class traffic. Comparing 1871 with 1876 we find that in that period—

" First-class passenger receipts have increased from 4,148,108*l.* to 4,566,271*l.*, or 10 per cent.

" Second-class passenger receipts have diminished from 5,167,535*l.* to 3,659,116*l.*, or 29 per cent.

" Third-class passenger receipts have increased from 8,115,304*l.* to 13,615,961*l.*, or 68 per cent.

" From a variety of causes, therefore, of which the Midland abolition of second-class carriages was only one, the third-class passenger traffic of railways grows out of all proportion to the others. Its rate of increase, 68 per cent. in five years, is nearly seven times the rate of increase of the first-class traffic, while the amount of the increase is overwhelmingly greater, as third-class traffic in 1871 was almost twice the amount of the first-class traffic. The contrast with the large diminution of second-class traffic is still more striking. To put the matter another way, first and second-class traffic receipts together amounted in 1871 to 9,315,643*l.*, and in 1876 the amount was 8,225,387*l.*, showing a decrease in the aggregate of about 12 per cent. In the same period the third-class traffic, which was at the beginning 8,115,304*l.*, somewhat less than the first and second class traffic combined, is now 13,615,961*l.*, or 65 per cent. more than that combined traffic. The change in the passenger journeys between 1871 and 1876 is equally striking.

" First-class passenger journeys have increased from 35,642,199 to 44,859,066, or 26 per cent.

" Second-class passenger journeys have decreased from 81,021,940 to 66,471,195, or 18 per cent.

" Third-class passenger journeys have increased from 258,556,615 to 426,950,034, or 65 per cent.

" Here the rate of increase as regards first-class passengers is greater than the rate of increase of receipts, while the diminution as regards second-class is less than the diminution in the receipts. But it is again the third-class traffic which has increased overwhelmingly out of proportion to the others. The amount of the increase is in truth far more than the total of the other two classes either in 1871 or 1876; it is no less a figure than 168,393,419; and the whole number of first and second-class passenger journeys was in 1871 only 116,664,139, and in 1876 only 111,337,261. The greater increase of journeys in the first-class and the smaller decrease in the second-class, as compared with receipts, may again be noted as indicating either a lowering of fares or a disproportionate shortening of the average journeys.

" Analysing the goods traffic in a similar manner, we find that the increase of 486,000*l.* is made up in the following manner:—

	£	£		
The mineral traffic is	13,520,213,	or 114,930	and 0·9	p. ct. more than in 1875
General merchandise	18,985,090,	„ 354,610	„ 1·9	„
Live stock	1,230,948,	„ 26,400	„ 2·2	„
Total, including receipts not classified	33,754,317,	„ 486,245	„ 1·4	„

"The increase is thus least of all in minerals, and greatest in general merchandise and live stock, the amount of the latter traffic being insignificant compared with that of the other two classes. These proportions in the rate of increase of mineral traffic as compared with general merchandise are contrasted with the experience of the previous year, in which there was an increase of nearly a million over 1874 in the receipts from mineral traffic, and of 255,000*l.* only in the receipts from general merchandise; and are also different from the experience of 1874, in which there was a slight diminution of the mineral traffic, coupled with a moderate increase of the general merchandise traffic. Taking a long period into account, however, viz., 1871 to 1876, the mineral traffic appears to increase somewhat more rapidly than the general merchandise traffic. In that period—

	£	£	Pr. cnt.
The mineral traffic has increased from.....	10,029,253	to 13,520,213,	or 35
General merchandise traffic has increased from	15,418,171	„ 18,985,090,	„ 23

"Thus the increase in the mineral traffic in the five years has been $6\frac{1}{3}$ per cent. per annum, and of general merchandise traffic about $4\frac{1}{3}$ per cent. per annum.

"If we compare the tonnage of minerals and general merchandise conveyed, we are led to pretty much the same conclusions as regards the period 1871 to 1876.

	Tons.	Tons.	Pr. cnt.
The mineral tonnage has increased from....	102,222,464	to 123,044,583,	or 20
General merchandise „	45,966,632	„ 55,988,686,	„ 22

"The greater rate of increase of receipts, as compared with the increase of tonnage, would seem to imply, so far as the average length of the carriage per ton is not increased, that there has not been any reduction of charges in the period. If, however, we compare 1876 with its predecessor only, we find that although the increase of mineral receipts is smaller than the increase of general merchandise receipts, the increase of tonnage is greater.

"The mineral tonnage in 1876 was 123,044,583; in 1875 it was 117,771,566; increase, 5,273,017 tons, or $4\frac{1}{2}$ per cent.

"The general merchandise tonnage in 1876 was 55,988,686; in 1875 it was 55,780,709; increase, 207,977 tons, or 0·4 per cent.

"It would seem then that mineral journeys must on the average have been greatly shortened last year along with a great increase in the quantities carried, or the charges, though still higher than they were in 1871, were reduced last year from what they had been a year or two previous. It is known that a change of this sort was, in fact, made on the northern railways, and the facts stated accord

with the results of such a change. If mineral journeys have not been shortened, however, the circumstance that goods train-mileage has not greatly increased becomes a little singular, as contrasted especially with the very great increase in passenger train-mileage. It is not improbable that last year's total may consist of rather shorter journeys on the average, while the charges have been somewhat reduced; but to some extent we may also believe there has been an economy of train-mileage; the same work may have been done with fewer trains. We need hardly say that we suggest no certain conclusion of our own on the facts, our object being simply to direct attention to the apparent contradictions in the bearing of the facts themselves, leaving it to those concerned and well acquainted with the subject to make their own inferences and explanations.

"Coming to the working expenditure, we find that while the receipts per passenger train-mile as above stated have fallen off last year 1·43*d.* (from 60·06*d.* to 58·63*d.*), and the receipts per goods train-mile have increased 0·46*d.* (from 75·32*d.* to 75·78*d.*), the receipts per mile generally have fallen 0·90*d.* (from 67·56*d.* to 66·66*d.*). This contrasts with a falling off of 0·75*d.* in the expenditure per train-mile (from 36·88*d.* to 36·13*d.*). In spite of some economy in the working, therefore, the net result per mile run to the railway companies was less in 1876 than in 1875, by the difference between 0·90*d.* and 0·75*d.*, or 0·15*d.* per train-mile. In the aggregate the net earnings have increased, but this was because a great many more miles were run, so that a less return per mile yields in the aggregate a rather larger sum.

"Tables No. 11 and No. 11A show in detail for a series of years how the expenditure per train-mile under the different heads of maintenance of way, locomotive power, general charges, &c., has varied. It will be observed that the greater part of the reduction of 0·75*d.* last year is under the head 'locomotive power,' the outlay on this item having fallen from 9·90*d.* to 9·40*d.*, or 0·50*d.* In most of the other items there is a fractional decline of some sort, the exceptions being general charges, rates, and taxes, compensation for damage to goods, and miscellaneous, in which there is a fractional increase. Altogether, it will be seen the expenditure per train-mile in 1876, though lower than the high maximum of 1874, viz., 37·89*d.*, is still near the very high level which was reached in 1873. Since that year the rates have been:—

	d.
1873	36·57
'74	37·89
'75	36·88
'76	36·13

which are in strong contrast with the rates of 32·27*d.* in 1872, and 30·02*d.* in 1870. It is believed that a further economy in railway working is being effected in the current year, but the difference between the present level and that of 1870 is immense. Comparing 1870 with 1876, we find that the increase is mainly in the following items:—

	1870.	1876.	Increase in 1876.
	d.	*d.*	*d.*
Maintenance of way	5·89	7·46	1·57
Locomotive power	7·92	9·40	1·48
Traffic expenses	8·64	10·90	2·26
Other items	7·57	8·37	0·80
Total	30·02	36·13	6·11

It remains to be seen how far it will be possible to go back to the standard of 1870. There has been an increase of wages, which it will be difficult to reduce, but on the opposite side has to be reckoned the increasing efficiency of many of the appliances as the traffic grows up to them, and the benefit the companies may derive from the use of steel rails and other improvements, of which they should now be reaping the benefits.

To look at the expenditure another way, the proportion per cent. to traffic receipts, though rather less than in 1875, was still very high, viz., 54·2 per cent. For the last four years the proportions have been: 1873, 54 per cent.; 1874, 55·6 per cent.; 1875, 54·6 per cent.; and 1876, 54·2 per cent.; all as compared with a proportion of only 48·8 per cent. in 1870. The difference of a penny per train-mile, it may be remarked, amounts to about a million sterling, and of 1 per cent. in the proportion of expenditure to receipts to about 600,000*l.*, so that there would be an enormous addition to the net earnings of the companies if they could get back to anything like the level of 1870.

"Before leaving this topic of traffic and working expenses, we may call attention to Table 6, showing the rate of increase of traffic in each year since 1858. From this it appears that, with the exception of 1868, for which the returns are incomplete, the rate of increase was lower last year than it has been in the whole of the above period. The rate is 1·59 per cent., the lowest previously recorded being 1·97 per cent. in 1862. The average rate of increase of the last three years has also been much under the average of the whole period. The rates of increase in these three years have been 2·20, 3·66, and 1·59 per cent., the mean being 2·82 per cent.; whereas the average increase of each year over the preceding one since 1858 has been 5·26 per cent.

Summary.

"It will be convenient to bring together in a short table the principal facts as to last year compared with the previous one to which reference has been made. We obtain the following comparison:—

	1876.	1875.	Increase in 1876.		Decrease in 1876.	
			Amount.	Per Cent.	Amount.	Per Cent.
Mileage	16,872	16,658	214	1·3	—	—
Double or more mileage	9,169	8,898	271	3·0	—	—
	£	£	£			
Capital	658,214,776	630,223,494	27,991,282	4·4	—	—
„ per mile open	39,012	37,833	1,179	3·1	—	—
Ordinary capital	262,008,883	254,600,732	7,408,151	2·9	—	—
Traffic—						
Passenger	26,163,551	25,714,681	448,870	1·7	—	—
Goods	33,754,317	33,268,072	486,245	1·5	—	—
Miscellaneous	2,297,907	2,254,247	43,660	1·9	—	—
Total	62,215,775	61,237,000	978,775	1·6	—	—
Working expenditure	33,535,509	33,220,728	314,781	0·9	—	—
Net earnings	28,680,266	28,016,272	663,994	2·4	—	—
	d.	*d.*			*d.*	
Receipts per train-mile from passenger and goods traffic	66·66	67·56	—	—	0·90	1·3
Expenditure per train-mile, exclusive of harbour, &c., expenses	36·13	36·88	—	—	0·75	2·1
Net earnings per train-mile	30·53	30·68	—	—	0·15	0·5
					£	
Percentage of net earnings on capital	4·36	4·45	—	—	0·09	2·0
Dividend paid on ordinary capital	4·52*	4·72*	—	—	0·20	4·2

* These percentages, as noticed above, are calculated on amounts a little in excess of the true totals.

"The final result of railway working in 1876 as shown in these figures may be stated in a very few words. The extent of the system has been increased very little during the year, only 1·3 per cent., but the double mileage has increased 3 per cent., showing the conversion of single into double miles. The capital at the same time has increased 4·4 per cent., but part of the increase is in nominal capital only; and the capital per mile open has increased 3·1 per cent. The ordinary capital, however, has increased more slowly than the total capital, or only 2·9 per cent. At the same time, the traffic has increased 1·6 per cent., or rather less than the rate of increase of capital; but the working expenditure has increased more slowly still, or only 0·9 per cent.; so that the increase of net earnings is 2·4 per cent., more nearly approaching the rate of increase of capital. The receipts, expenditure, and net earnings per train-mile have all decreased slightly. The result is (1) a slight diminution of the percentage of net earnings on the

whole capital, viz., from 4·45 to 4·36 per cent., a reduction which would be still less in reality to those concerned, allowing for the increase in nominal capital only as distinguished from an increase of actual capital outlay; and (2) a rather larger but still not a large diminution of the dividend paid on the ordinary capital, viz., from 4·72 to 4·52 per cent., a diminution which would also be less if allowance were made for the infusion of merely nominal capital. These are the results in a year in which the increase of traffic has been at a lower rate than at any time since 1858, the average rate having been in that period 5·26 per cent., while last year it was only 1·59 per cent. They are also the results at a time when the rate of working expenses is at a high level compared with the whole period prior to 1872. The result to railway capitalists in the circumstances cannot be deemed unfavourable on the average, though the average is, no doubt, composed in part of some unfavourable extremes. As regards the public use of railways, the facts stated as to the increase of third-class traffic, as well as of minerals and goods conveyed, would appear to show that that use has been increased in 1876 in a greater degree than the return to the owners of the railway system."

IV.—*Notes on Recent Additions to the Library.*

Among the more important of the recent additions to the Statistical Society's Library, a list of which is annexed, is the Financial Treatise of M. Paul Leroy-Beaulieu, the editor of the *Economiste Français*, published by Guillaumin and Co. This work is in two large octavo volumes, closely printed, containing, as we estimate, very nearly as much printed matter as the standard treatise of M. de Parieu, which is in five volumes. The author tells us in his preface that the book has been the work of the last five years, and is largely the fruit of researches and studies in discharge of his duties as editor of the above journal. It is certainly a monument of patient and steady industry, while the style and arrangement are thoroughly popular, so that the reader has convenient access in these volumes to full and accurate information on the subjects treated. At first sight it might be thought M. Leroy-Beaulieu's work must be one of supererogation. There are at least three or four able treatises on finance by French writers. M. Garnier, in his concise *Traité des Finances*, gives a general outline of the whole subject; M. d'Audiffret-Pasquier, in his *Système Financier de la France*, has given a very full account of French finance, with ample statistical notices; M. Vignes, in his *Traité des Impôts*, gives a most exhaustive description of the sources of national revenue in France, also enriched with ample statistical notices; and M. Esquirou de Parieu, in the treatise already referred to, covers the whole ground occupied by the present author, discussing fully the general theory of finance and the practice of the more important countries. But the justification for the present work is that a good many years have elapsed since the latest of these treatises, that the world has grown and changed much since then, and that in particular, from a French point of view, the Franco-German war, and the indemnity pay-

ments have thrown new light on the resources of modern industrial communities and the operations connected with national indebtedness. If the old books are to be used, it would be convenient to supplement them with later statistical notices and illustrations from recent history, and for this purpose a wholly new book, instead of merely a new edition of one of the older treatises, has its advantages. The occasion of the present treatise is thus a sufficient one, and it would hardly be going too far to say that it will be indispensable to all students of finance to study it. The work is in two main divisions: the first being occupied with a discussion and description of the sources of national revenue. M. Leroy-Beaulieu avoids altogether the vexed questions of the objects of national expenditure, believing that these lie rather within the general domain of political economy than within the special domain of finance. Assuming that Governments are to have a revenue, he simply discusses and describes the methods to be pursued. The second division of the book is devoted to what we may call the financial operations of Governments other than operations to procure revenue by taxation or otherwise. To this division belong all questions as to the methods of borrowing which Governments may adopt, questions of paper currency, and the like. The illustrations of this division are especially novel, being largely drawn from French experience after the last war. On the whole, we may add, M. Leroy-Beaulieu appears to be more felicitous than French writers in general in his references to English matters, though his information appears sometimes to be a good deal out of date at the present time, as if he had written two or three years ago, and had not afterwards corrected the figures from later statistics, which he must have had. He appears also to have been troubled a little, as is not unnatural, by the confusion in our English financial statistics, occasioned by there being two sets of figures given by some of our financial departments, one set for the calendar year ending 31st December, and the other set for the financial year ending 31st March. Perhaps his most serious slips are (1) that in tracing the growth of expenditure in England during the last fifty years he fails to notice altogether how much of the growth he describes is apparent only, being due to the constant changes in the mode of keeping the accounts, by which there have been substituted for entries of net income only entries of gross income on one side and of items of expense on the other side. The most conspicuous instance of this was just before the Crimean War, when the whole expense of collecting the revenue—about 4 millions —which was formerly deducted from the income, appeared for the first time in the budget statements as an item of expenditure. If M. Leroy-Beaulieu had allowed for this apparent growth of expenditure in England, instead of treating the nominal increase as real, his remarks would have been a good deal modified. (2) M. Leroy-Beaulieu explains in one place that the Committees of the House of Commons in which the budget is discussed, are distinguished from the ordinary sittings of that body by being private. Of course they are as public and as much reported as any other sittings of the House. But these are, after all, far from serious slips in a foreign author who is otherwise generally accurate, who has taken evident

pains to be right in his facts, and who carefully cites his authorities—a most undeniable merit in such a book.

We notice next the *Jahrbuch für die Amtliche Statistik des Preussichen Staats* (fourth year), issued from the bureau of Dr. Engel. Almost every country now issues an Annuaire, or Statistical Abstract, or Jahrbuch, and there are no more useful or interesting books to public men. That of Dr. Engel, we need hardly say, has unusual merits, both in respect of the number of subjects embraced and the fulness of treatment, while the arrangement is also such as may be usefully studied by those who attempt a logical arrangement of statistical data. It may be useful to notice that the present volumes, although professedly only a Jahrbuch for the Prussian State, contain, on some points, full statistics of the German empire. The finance and railway statistics of Germany are especially very full, and there is an account of the indemnity payments, which will be most useful for reference.

From America, besides the publications of the Bureau of Statistics, we have to notice especially the reports of the Controller of the Currency. These reports contain full statistical notices and tables with reference to the national banks of the United States. One of the chief duties of the Controller of the Currency is to supervise these banks, whose circulation of notes is officially regulated. In this capacity the controller obtains an account of the position of the banks so many times a-year, and the statistics thus obtained for a series of years illustrate the recent economic and industrial history of the United States. The first annual report on the internal commerce of the United States, which accompanies this year the annual trade returns of the Bureau of Statistics, contains an elaborate account of the railway and canal system of the United States, the competition of railways for through traffic, and similar matters which are of special interest to investors in United States securities at the present time.

From Russia, it will be observed, there are several most important statistical works, including the statistics of the town of St. Petersburg, the general statistics of the Russian Empire, and the statistics of the finances of Russia. Unfortunately, as far as concerns any purposes of general reference in this country, the volumes thus added to the library are in the Russian language, of which there are yet very few students in England. For practical purposes an Annuaire in French, like that of M. Vessélovsky, which is noticed in the preceding pages, is much more useful, and the Russian Government, it may be hoped, will continue these publications in French. At the same time the Russian Government is far from being liable to the reproach of being without statistics, and if these statistics are not better known, the fault lies with the statisticians who have neglected the study of the Russian language. It may be hoped that some of the younger members of the Society will turn their attention to Russia, and supplement the work of Mr. Ravenstein in his most interesting paper, which is published in this number of the *Journal*, as to the population statistics of Russia and Turkey.

From Italy it will be observed there is a very large contribution.

No Government has lately done so much as that of Italy in making its statistics known, and there is now a large collection of Italian statistics in our library. It is certainly to be regretted that so little attention is paid to these statistics, and, perhaps, we have only to notice the matter, to induce some member of the Society to give an account of the statistics of Italy.

The library has also received additions from the Imperial Government of Germany, from the Governments of Saxony, Bavaria, and other German States, from Austria, Hungary, the Netherlands, Portugal, and other foreign countries, including a volume of trade statistics (for the first time) from the Government of Uruguay, besides the usual variety of colonial publications.

Of home official publications there have been received the Trade and Navigation Annual Statements of the Board of Trade, the Emigration and Railway Statistics from the same department, the Statistical Abstracts of the United Kingdom and the Colonies, the Report of Mr. Danvers on Railways to the Indian Government, the Quarterly Reports of the Registrars General, of Births, Marriages, and Deaths, in England, Ireland, and Scotland, &c., &c. We have extracted above a portion of the report to the Board of Trade on Railways.

Among non-official home publications, we notice Mr. Bourne's papers on our Food Supply, read to the British Association and the Manchester Statistical Society, a continuation and amplification of the discussion in Mr. Bourne's paper on Imports and Exports, which was read at the last December meeting of this Society. The three papers contain altogether a full discussion of the whole subject of the excess of our imports over our exports, and the dependence of the population of the United Kingdom on Foreign supplies of food. We have also to notice Mr. Lawson Tait's book on Hospitals. This book is in substance the essay which was second in the competition for the Howard Medal last year, and of which, though they awarded the medal to another competitor, the examiners expressed a very high opinion. Mr. Tait has done well to publish his essay, and as the essay which obtained the medal has also been printed in substance in the Society's *Journal*, the Library is enriched by two valuable papers on this subject, which the Howard competition has called forth.

Among foreign non-official publications we have to notice especially the *Uebersichten über Production, Welthandel und verkehrsmittel*, von Dr. Fr. Xav. von Neumann-Spallart, as well as one or two minor contributions by the same author. The survey of the Production and Trade of the World is a separate reprint of a contribution of the author to Behm's *Geographical Year Book*, and gives a striking picture, in a condensed form, of the material progress of the world during the years preceding and immediately following the crisis of 1873. The statistics of production generally, imports and exports, railway extension, production and distribution of gold and silver, banking and currency, and similar matters, all find a place in this little work in a connected and condensed form, the book being, in short, as regards trade and industry, a digest of the year books of every civilised country.

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Die Naturkräfte Fine naturwissen-schaftliche Volksbibliothek Die Gesetzmätzigkeit im Gesellschaftsleben Statistische Studien. Von Dr. Georg Mayr. 354 pp., maps, etc., 12mo. München, 1877	The Author
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GERMANY. Monatschefte zur Statistik des Deutschen Reichs, 1877. Band 25, hefte iv zu vii. 4to. Berlin, 1877	Kaiserlichen Statistischen Amt. Berlin
HAMBURG. Handel und Schiffahrt, 1876. 214 pp., roy. 4to. Hamburg, 1877	Directeur de la Handelsstatistischen Bureau
HUNGARY. Statistisches Jahrbuch für Ungarn, 5th Jahrgang 1875. Hefte iii, v, vi, und xi. Roy. 8vo. Budapest	Kon. Ung. Statistical Bureau
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Meteorologia Italiana. Riassunto mensile ed annuale, per l'anno 1876. Roma, 1877	„
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JOURNAL OF THE STATISTICAL SOCIETY,

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INAUGURAL ADDRESS *of* G. J. SHAW-LEFEVRE, ESQ., M.P., PRESIDENT *of the* STATISTICAL SOCIETY, *delivered on* TUESDAY, *the 20th November*, 1877.

THE honour which you have conferred upon me, in electing me President for the coming year, is greatly enhanced when I look back at the list of distinguished men, who have filled the post since the formation of the Society, more than forty-three years ago—a list which includes the names of Lord Russell, Mr. Gladstone, Lord Derby, and Lord Overstone.

When I recalled this list, the labours and discussions of so many years, and the accumulated work of the Society, in the closely-printed volumes of its transactions, it seemed to me that its functions must be well nigh exhausted, and that in the future there would be work only for gleaners in the field from which the harvest had already been gathered by those who have gone before us.

A more careful consideration, however, of the work already achieved by the Society, of the purpose which it has in view, and of the field which still remains for its labours, has relieved me of much of this fear, and tends to show that there is still ample work before it, and that its future labours may be fruitful of further result, just in proportion as the condition of society advances, and becomes more complex and varied.

The object of the Association has been well defined to be the study of the conditions and prospects of society. The state or condition of society is the simultaneous state of all the greater social facts or phenomena, and the progress of society is the succession of these facts or phenomena considered in relation to one another; and as these are constantly changing, it is obvious that the work of investigation can never be completed or exhausted; the more so, as such work does not consist in the mere collection of aggregate facts, and the piling up of figures, but in arranging and methodising information, in the true spirit of scientific inquiry, so as to throw as much light as possible upon the relation of these social phenomena to one another, and their causes.

It has been the fixed principle of the Society to keep its pro-

ceedings free from politics; by this I understand, not that it has refused to deal with questions, which from time to time have interested and even agitated the country, and have been the battle-field of contending political parties; but that it has applied to such questions the test of true philosophical inquiry; that it has maintained above party interests or political strife, the standard of truth; and that it has not been satisfied so long as any fact bearing upon the subject under discussion remained undiscovered or unappreciated. Looking back at the proceedings of the Society, I find that it has not lived in an atmosphere of philosophic seclusion, or disconnected itself from the current life and interests of the day, but has dealt with and treated in an exhaustive manner those subjects which have occupied the public mind, illustrating them by examples and experience from other countries, supplying material for the guidance of public opinion, and remedying the imperfect knowledge, in which in the first instance most subjects are enveloped.

And, as in the past, so in the future; in the life or progress of a country like ours, with its vast empire, its extended interests, and its endless points of contact with other countries, there must be a continuous succession of subjects of vital interest to the community, pressing upon the heel of one another, and requiring the investigation of impartial thinkers, statists, philosophers, and experts, before they are ripe for practical dealing by statesmen in Parliament, or before they can be understood in all their bearings by the public. It appears to me then, that one of the first duties of this Society, is to select those subjects for its investigation and discussion, which are of present interest to the public, or which in the near future are likely to be dealt with; to apply to them the most rigid examination of all the surrounding facts; to test theories by verification from every possible quarter; to lay bare with unflinching severity any fallacies, which are too certain to be attendant on such discussions; and to supply methods of comparison by example or difference, which may tend to elucidate the bearing of proposed measures. Another and not less important work is to follow in the wake of public discussion and legislation, and to test the results as soon as they begin to exhibit themselves. The last forty years during which the Society has been in existence have formed a period of extraordinary activity in legislation. There is scarcely a branch of our social arrangements which has not been dealt with. New functions have been assumed for the Government, new departments of State have been created. Existing institutions and endowments have been reformed, and applied to extended use. Many of these changes and much of this legislation may be almost called experimental. The results require a

careful watching or notation. The success or failure of these will throw much light upon the expediency of further changes.

Another and not less promising field for inquiry is that opened out by the greater spread of statistical inquiry in other countries. I need hardly point out how much has been done in this direction of late years. Every year the statistical knowledge of Europe is being improved and extended. There yet remains an abundant work in collecting and comparing these facts, in showing where differences exist, and in ascertaining the causes.

It has sometimes been contended that Statistics form in themselves a distinct and separate science, apart from the subject with which they deal. I doubt whether this view can be sustained. Statistics I understand to be the statement and the grouping of facts, and a science, to be the statement of the relation of phenomena to one another; statistics then, are important and necessary adjuncts and implements of many sciences, especially that of Social Science (including Political Economy), but not a science in themselves, unless it be that there is a science in the mere arrangement of facts and information, apart from their subject matter, so as to make them clear and intelligible; but this seems to me to be an art rather than a science. The mere expression of facts, or their grouping in a statistical form, without relation to their causes or mutual dependence, is no more a science than a description of facts, apart from the laws which govern them, could be considered as constituting any science physical or natural.

Again, it has been contended that statistics are to social science what experiments are to natural philosophy. This also appears to me to be scarcely in accordance with due precision of language. Statistics may be, and commonly are, used for the most important task of showing the results of an experiment in social science, but are no more an experiment themselves, than are the notes of the natural philosopher, which record the results of his experiments. Much of the legislative work in this country, during the last forty years, has been of a tentative and experimental character. It was adopted under the impression that improvement would result. It would be possible to repeal it if the results were unsatisfactory. It is also possible to test the value of the results by experience, and Statistics give us the best means of effecting this; by comparing facts at different intervals, before and after legislation, and by endeavouring to cast out, or make allowance, for independent causes, great light may be thrown upon the effect of legislation; but it seems a misnomer to call the statistics themselves the experiment. The experiment was legislation. Statistics give us the means of ascertaining results, and are, therefore, most valuable to the sociologist and legislator.

But although statistics can neither be reckoned as a science, nor treated, as in themselves in the nature of an experiment, they are, as I have said, the indispensable adjuncts of many sciences, and more especially of that which deals with the condition and progress of society; they have been the means of discovering a certain number of empirical laws relating to man and his functions; they enable us to take a comprehensive view of society in all its relations and progress; they have suggested, and will continue to suggest, theories as to the causes which determine the condition of men; by comparing the condition of society at different places, they throw the most important light upon these causes; and still more by comparing the condition at different intervals of time, they enable us to study the dynamics of society, and give us the means of verification of theories which have been propounded on this most important subject. So closely allied are they, and so necessary an adjunct to social science and political economy, that it is difficult to form a table of statistics, without reference to the branch of these sciences which it illustrates; and it is still more impossible to discuss statistics, without importing arguments as to their bearing upon the laws which are the special objects of these sciences.

In order, however, to estimate statistics at their true value, from the point of view of social science, we must always bear in mind that the science of Sociology (including Political Economy) is essentially a deductive science. It has been insisted upon by Mr. J. S. Mill, with all his authority as a philosopher, that the process of induction helps us but little to solve any of the greater social problems, and, at the best, only enables us to realise certain empirical laws, which, however constant they may appear to be, are only approximate generalisations, and can only be counted on as applicable to unobserved cases, so long as there is reason to think that no change has taken place in the remoter causes, on which the immediate causes depend. The number and complexity of social phenomena, each of which exerts an influence on all the others, makes it impossible for us to determine, by observation and induction, the exact relations between them, and the effect of each upon all the others. The only method which is effective in results, is that which separates certain classes of phenomena, and endeavours to show the direct relation between them, irrespective of other effects which may contribute to either of them from other causes. The deductive method enables us to do this in two ways, either by deducing our conclusions by reasoning from certain other data, or from certain assumed principles of human nature, and then verifying these conclusions by observation of the particular phenomena under consideration; or by obtaining our conclusions conjecturally from observation of the phenomena, and afterwards connecting

them with the principles of human nature by *à priori* reasoning.

In the opinion of some philosophers, such as M. Comte and his school, this second method of deduction can alone be used with advantage for sociological speculation. This opinion, however, is not shared by Mr. Mill and others, who claim for the first method an importance equal, if not superior, to the latter. To whichever process, however, we accord the better or proper use, it is clear that observation is equally necessary; and statistics, by giving us a comprehensive view of the facts bearing upon the particular subject under investigation, enable us either to verify the conclusions arrived at by the process of deduction, or to form the material for an argument, which may afterwards be verified by deduction from the principles of human nature.

From this brief review of the methods of reasoning applicable to social science, it will be seen that the main use of what we call statistics, in connection with that science, is to collect the facts of society in a form which will—

1. Enable us to generalise in certain cases, and to infer from such generalisations empirical laws of society.

2. Supply us the material from which we can deduce causes, and thus establish a scientific relation between certain phenomena.

3. Enable us to verify the conclusions which have been drawn from *à priori* reasoning, and thus establish on a sure basis the laws which govern the condition and progress of society.

Many examples could be given of the use of statistics under the first of these heads. Among them are the empirical laws which we draw from the accumulated experience of life, of the constancy of recurrence of certain phenomena, such as suicides, accidents in the streets, and negligence of various kinds, from which we can predict almost to a fraction what will be the numbers of such cases in successive years. Such empirical laws, however, are more interesting than valuable, and throw no great light upon the progress of society. It is therefore under the two other heads, and by the methods suggested in them, that we have made in the past, and must hope in the future, to make any great advance in determining the laws of social science. It is the collection and methodising of facts, bearing upon the condition of men at different places and at different times, which supply us with the means and material for inferring or verifying the laws which govern the condition and progress of society.

In making these observations, and in arranging and methodising the facts resulting therefrom, with a view to social science, it is necessary to bear in mind the two principal methods, by which we are enabled to single out from among the circumstances, which precede or follow a phenomenon, those with which it is really

connected by an invariable law. The one, namely by comparing together different instances, in which the same phenomenon occurs; the other by comparing instances, in which the phenomenon does occur, with instances in other respects similar, in which it does not; methods which have been denominated by Mr. Mill, the Method of Agreement and the Method of Difference. It is on these two methods that all the value of comparative statistics as regards two countries or two periods depends; and it is often by a combination of these two methods, that the most valuable results are obtained.

The simplest example which can be given of the combined use of these methods is this. The rate of mortality of several towns, of which the general condition is much the same, is observed; in some the rate is the same and low, in others it is much higher. It is at once assumed, and with fair reason, that there must be hygienic defects in the towns with high mortality, which account for this difference. The attention of the public being called to this, the cause may be found, and a remedy applied. So thoroughly is this now recognised, that the principle is admitted in legislation; and in the Artisans Dwellings Act the powers conferred upon local authorities of taking under compulsory powers the houses in an unsanitary district, are made to depend upon the report (among other things) that the rate of mortality in such district is excessive.

Another and familiar illustration of the method of difference is that already referred to, of ascertaining the results of legislation, and comparing them with the preconceived theories, on which the legislation was based. In itself, the degree of proof is often weak, for other causes than the assumed one very often have contributed to the improvement; but if we can show that in two or more cases, where the change has been effected, the same new facts are observed subsequently, and that in other cases where no change was made, no such new facts make their appearance, the argument of cause and effect is greatly strengthened.

As an illustration of the combined differences of time and place, and of the use of statistics for throwing light upon those differences, and, therefore, for enabling us to discern the law which governs the progress of a society, I will take a case which is by no means yet fully determined, but is one of the deepest interest and moment.

Statistical inquiry has shown us that France is a country, where peasant proprietors exist in great numbers. Probably two-fifths of its area are owned by about 5 millions of peasants, two-thirds of whom cultivate their own small properties. In England such a class does not exist. In France again the census exhibits the somewhat startling fact, that the population increases by such very small annual movements, that it may almost be called stationary. In

England, the births exceed the deaths in a proportion, which but for emigration, would cause the population to double itself in fifty years. These two differences in countries, of which the civilisation is so nearly alike, and the general conditions otherwise so similar, have naturally attracted much attention, and the theory has been propounded that they are connected together as cause and effect, and that the cause of the small increase of population in France, is the great division of its land, and the existence of an immense class of peasant proprietors; and those who have propounded this theory have proceeded to justify the hypothesis, by arguing from the principles of human nature, that such a result would be likely to follow from such a cause.

It may be interesting, however, to observe that not many years ago, and until the census of France threw full light upon the rate of increase of its population, a theory of precisely opposite character prevailed among philosophers in England, as to the effect of a large class of peasant proprietors. Arthur Young had pointed out, with his accustomed accuracy in reporting matters of fact, that even at the time of the Revolution of 1789, the number of peasant proprietors in France was very great. He said that probably one-third of its area was owned by peasants. Like most English economists, he could see little merit in such a condition, though he bore strong testimony to the unremitting industry of these proprietors, which, he said, was "so conspicuous, and so meritorious, that no "commendations would be too great for it. It was sufficient to prove "that property in land was, of all others, the most active instigator to "severe and incessant labour." The main objection, however, which he found to a system of small proprietors, and their custom of equal division, on death, among their children, was, that it tended to the creation of a population larger than the country could bear, and with an ever-decreasing means of subsistence.

"The population," he said, "flowing from this division of pro-"perty is, in some cases, great, but it is the multiplication of "wretchedness. Couples marry and procreate, in the idea, not the "reality of a maintenance. They increase beyond the demand of "towns and manufactures, and the consequence is distress, and "numbers dying of diseases, arising from insufficient nourishment. "Hence, therefore, small properties, much divided, prove the "greatest source of misery that can be conceived, and this has "operated to such an extent and degree in France, that a law "undoubtedly ought to be passed to render all division below a "certain number of acres illegal." * * * "No country "upon earth is cursed with so bad a Government as that would be "which aimed at a general division of property; so numerous is that population which arises from principles, pure and virtuous

" in themselves, but leads directly to the extremes of human " misery."

The same objections to peasant proprietors were frequently insisted upon by some of the ablest political economists of this country. In 1823, Mr. McCulloch, one of the most vigorous opponents of the system, prophesied of France, " That in half a century it would " certainly be the greatest pauper warren in Europe, and, along " with Ireland, have the honour of furnishing hewers of wood and " drawers of water for all other countries in the world." And Mr. Jones, the well-known lecturer on political economy at Haileybury, writing in 1836 on The Distribution of Wealth, said: "A " peasant population raising their own wages from the soil, and " consuming them in kind, are universally acted upon very feebly by " internal checks or by motives disposing them to restraint. The " consequence is that unless some external cause, quite independent " of their will, forces such peasant cultivators to slacken their rate " of increase, they will, in a limited territory, very rapidly approach " a state of want and penury, and will be stopped at last only by " the physical impossibility of procuring subsistence."

There could not well be more conspicuous instances of the danger of propounding theories without verifying them by facts. That the peasantry of France in 1789 were in a miserable state admits of no doubt; nothing however was then known of the rate of increase of population; the peasants themselves attributed their miseries to the exaction of their feudal lords, under whom they, for the most part, held by a certain tenure, but subject to extortions of all kinds; and the result of the Revolution of 1789 was to free the peasantry from these exactions, and to destroy all traces of the feudal system. It also resulted in a great accession to the number of peasants by the sale of Church lands and lands belonging to the *emigré* nobility; and a further increase accrued after the revolution by means of what were called the "bandes noires," land speculators, who bought up large properties, and resold them to the tenants. That the wealth of France has enormously increased since then, and that the condition of the individual peasant is improved beyond all comparison, can admit of no doubt; yet so far from this increase of peasant proprietors, resulting in an increased tendency to over population, or in the creation of a pauper warren in France, the very reverse is the case; and we now know that for many years past, the population of France has been increasing at a very low rate, and is at this moment almost stationary. It is worthy of notice, that the school of economists, who most strongly object to peasant properties, have now, in view of the patent facts brought out by the successive census of France, completely changed the front of their argument; admitting the slow growth of population

in France, they condemn it in terms not less strong than those, in which Arthur Young, McCulloch, and others, condemned the reverse, and they attribute it to the very cause which, but a few years ago, was supposed to lead to the very opposite result. My friend Mr. Caird, who recently addressed himself to this subject, quoted approvingly, with reference to the slow growth of population in France, Rousseau's opinion, that the worst of all famines was the famine of men. Whether the slow growth of a population, where there is no great field for emigration, is to be deplored or not, whether its cause its rightly attributed to peasant proprietorship, and whether a wide distribution of landed property is to be condemned or approved, are questions of the deepest interest for economists of the present day. To discuss them at length would be beyond my present limits. I have used the illustration for the purpose of showing the use that can be made of comparing differences of condition, combined with different rates of progress, and the value of statistical information for some of the highest problems of social life.

Another example of the use to be made of comparing statistics at different periods, in verification of a theory, which has been deductively worked out, is that suggested by the well-known case of Free Trade. The law or principle of free trade was one of the greatest efforts, which had ever been accomplished by the deductive method. It was deduced by Adam Smith and Turgot from general principles, at a time when the means of verifying the theory were few and slight. Adopted, however, as it has been by this country and by others, to a more limited extent, it is now possible by comparing the state of trade at different periods, before and after the dates of the several changes, and with countries where no such change has taken place, to obtain ample verification by the results of experience, and though care must be taken not to disregard other causes which have contributed to the great increase of trade and prosperity, it is not too much to say that every year experience tends to confirm the theory, and to disprove and confound all the arguments of those who opposed it.

It must never, however, be forgotten that in such comparisons other causes not only may, but must exist. The method of differences is to be fully relied upon only, when all other conditions of the two societies, or of the same society at two periods, are the same, and this never is or can be the case. The experimenter in chemistry or physics may secure that all other conditions, surrounding the phenomena which he is investigating, shall be the same, but the sociologist cannot make experiments in this sense; the phenomena which he connects together may be acted upon by other causes, wholly remote from that to which he attributes them, and at its

best, the argument which he can deduce is only one of tendency, and not of certain and sole cause and effect.

In making comparison also between two periods and two places, it is necessary that the statistics should be collected and framed upon the same basis and with the same care, otherwise their value for suggesting or verifying laws of progress will be greatly reduced or destroyed.

The wreck statistics, for instance, show a continually increasing number of casualties to British ships. There is reason, however, to believe that this increase is apparent rather than real, and is due to the greater accuracy and certainty with which such information is obtained and recorded, and to the increased vigilance of the agents who report these cases, rather than to the increased danger of navigation, or to greater recklessness of shipowners or shipmasters.

So again in the matter of insanity. The official returns show a continually increasing number of insane persons. It by no means follows, as a certainty, that insanity is increasing in this country; and it may be that the returns only exhibit increasing knowledge of the extent to which insanity exists. Individuals who escaped the register in earlier years may now be included. It may also be that the line, which divides the insane from the sane, may be somewhat differently drawn now, than it was a few years ago. There is no absolutely certain demarcation between them; and the better treatment of the insane may have tended to the inclusion of many, who, for humane reasons, were formerly classified otherwise; and it may be that the doctors, who apply their minds to this special subject, are inclined to extend their functions, and claim as patients an ever-increasing range of persons. These matters have to be considered before we can accept the apparent conclusion of official returns that insanity has increased.

As time goes on, however, many of these irregular causes of increase in periodic or comparative statistics will be lessened; and the value of such returns will continually increase just in proportion as such alien causes of difference are eliminated.

I have hitherto devoted myself to the use of statistics; let me now say a few words upon the abuse to which they are not unfrequently subjected, and in respect of which it seems to me this Society has almost as much concern, as in their use.

That the public requires the assistance—I might almost say the protection—of such a Society from the hasty generalisations, the imperfect knowledge, the interested objects, and the faulty reasonings of the crowd of persons, who are always endeavouring to lead it to their own views and persuasions, is only too certain. It is impossible to take up the reports of debates in the legislature, or of discussions in societies, which deal with social subjects, or with

reports and lectures of societies formed to carry out express objects, or even the articles of our daily papers which deal with such subjects, without observing the ever-increasing importance which is given to statistical information, and the reliance which is placed upon it as a basis for theories suggested, or as support to conclusions to which it is hoped to persuade us. The importance of statistical proof of theories seems to be deeply impressed in the minds of the public; and yet there are probably no more specious fallacies than those which are wrapped up in the form of a statistical argument, and no arguments which require more careful investigation of all surrounding facts than those which rely only on statistics. Two groups of facts are found to correspond in two places or at two periods, and hasty observers and bad reasoners at once jump to the conclusion, that these are connected together as causes and effects, regardless of the many other causes, which may have contributed in either case to the occurrence of the same facts. Often in the mere statement of the facts, an importance is given to one class of results, which when stated in another form, would lose altogether its point or importance.

And yet notwithstanding this constant resort to statistics, nothing is more common than to hear the deprecation of any use being made of them. How often do we hear the expression, "We "care nothing for your statistics. Anything can be proved by "statistics." That there is some ground for this distrust cannot be denied. The explanation is probably this. Political economy and social science are, as already explained, of necessity deductive sciences; and most persons in advocating any social change use this method. Starting with premises founded, perhaps on fact, or perhaps on assumption, they work out a chain of reasoning, and then, feeling the necessity of verifying their conclusions by facts, they resort to statistics. It is in the selection of facts, which they then collate, that the main danger of the misuse of statistics lies. It is not every observer, who has the moral courage to select his facts with absolute fairness, and without any leaning to those which best suit his preconceived theory, or who can resist the temptation to classify and arrange the facts in the manner which tells most favourably for his theory. Much of this unfairness, or misuse of statistics is unconscious. It is only trained observers, and most accurate and philosophic reasoners, who are able to resist these temptations, and who are prepared to abandon their theories when they find that, having regard to all the facts, they cannot be substantiated.

The illustrations which have already been given of the methods of reasoning, and the use of statistics for this purpose, will at once suggest numerous sources of error. In comparing the conditions of

two societies in two periods, all other differences than those which are the subject of the theory sought to be established, are disregarded. For an example of this kind of error, I might point out the familiar case of the comparison of crime in England and Ireland. The criminal statistics of the two countries show, what is at first sight, a striking difference between the two communities. The indictable offences committed in Ireland are, relatively to the population, one-half less numerous than those in England; and Irishmen are continually quoting this in proof of the superior morality of their countrymen. The argument is necessarily based on the supposed identity of other conditions. This, however, is very far from being the real case. Ireland is a rural country. England has, in a vastly greater proportion, an urban population. If we compare the rural parts of Ireland with the rural parts of England, the conditions as to crime are reversed, and it appears that the English rural population commit proportionally fewer crimes than the Irish. So again, when we compare the population of Dublin with the population of the great cities of England, we find that proportionally the Dublin people commit a great many more crimes than the population of Liverpool, Birmingham, or Manchester; and again, the Irish population of our great English cities commit proportionately a far higher number of crimes than their English fellow citizens.

It follows then that when the like is compared with the like, when either rural Ireland is compared with rural England, or urban Ireland with urban England, the proportion of crime is distinctly greater in Ireland than in England; the statistics looked at in this way in no way support the theory, so dear to most Irishmen, that their countrymen are more moral than others. In truth the statistics, as quoted, prove no more than the notorious fact that Ireland is a more rural country than England, and that consequently there are fewer temptations and opportunities for crime.

I will only add on this subject, that the different classifications of crime in England and Scotland, and still more between England and other European countries, makes any comparison of their state as regards crime, all but impossible, or, at all events, a task of superhuman labour.

Let me take another illustration. There is no subject on which so much statistical labour has been expended as that connected with intoxicating liquors. Assertions are loudly made that drunkenness is largely on the increase; that drink is the main cause of crime and pauperism, and that the number of licensed houses is accountable for much of this. These and many other questions, affecting the subject, are habitually expounded by statistics of the fullest kind. The proposition that our population has become more drunken, is supported by the grave figures of the criminal statistics, that the

number of apprehensions for drunkenness have increased during the past ten years from 100,000 to 200,000. What clearer proof would seem necessary than the mere statement of these figures? They carry conviction at once to most persons. The more careful inquirer, however, not content with the first proof to hand, feels it necessary to look further. A comparison of a number of rural districts, at the two periods, shows that there has been little increase in the number of committals, and we find in fact, that the increase is almost wholly confined to some five or six counties, where there was immense expansion of trade between the years 1870 and 1874. Some of the increase, even in these districts, is probably due to the greater activity of the police in arresting persons in a state of drunkenness, or to greater severity on the part of the magistrates. The consideration of these and other facts, tends to show that drinking and drunkenness have not become more general among the whole population, but only in certain districts, and that probably in these it is due to the great rise of wages, which has supplied many of the very lowest class with the means of indulgence, wanting to them in ordinary times.

The connection between drunkenness and the number of public houses depends almost wholly upon general statements, rather than upon specific data and statistics; indeed, an argument has been produced, founded upon statistics, that, so far from there being any direct proportion or relation between the number of public houses and the number of committals for drunkenness, the ratio is rather inverted, and that in those towns, where there are most public houses, there are fewer committals for drunkenness, than in those, where public houses are comparatively few and far between. For instance, in Norwich there is a public house to every 124 inhabitants, and there is a committal for drunkenness for every 367 persons. In Nottingham there is a licensed house for 179 persons, and a committal for drunkenness out of every 112 persons. In Liverpool, at the other end of the list, there is a licensed house for every 209 inhabitants, and a committal for drunkenness for every 24 persons.

The figures seem to upset altogether the commonly received theory, that drunkenness and drinking have any relation to the number of public houses, and have even been quoted in support of an opposite theory, that free trade in liquor is more conducive to sobriety, than monopoly and restriction. But here again it is necessary to look further, and to be quite certain before using these figures in support of such a theory, that the other conditions are the same. It is not with any wish to throw discredit upon the Irish, that I find it necessary to point out, that the number of Irish born persons living in those towns included in the list referred to, bears a very suspicious relation to the number of committals for drunken-

ness; and that in those towns where the committals are few, the Irish also are conspicuous for their absence. In Norwich, for instance, they form but 3 per 1,000 of the population; in Nottingham they are 13 per 1,000; and at Liverpool, where the committals are most numerous, there are 138 per 1,000.

The presence of a large Irish born population, is indicative of a great demand for labour of the lowest kind, and what has been already stated about crime, tends to show that Irishmen removed from the restraint of their own countrymen, and from the many safeguards, social and religious, which environ them in their own homes, give way quicker to temptation, or are more easily led by bad example.

I do not propose to affirm any positive conclusion on this point. I merely wish to point out the danger of using statistics in support of a particular theory, without subjecting all the surrounding facts to a rigid examination, with the object of seeing whether they do not better fit in with some other theory. It may be that drink has less relation to the number of public houses than is commonly supposed, but to prove this, it would be necessary to select places, similar in every condition except in the number of public houses, where the rate of wages has been rising or falling in about the same ratio, where the police have been equally active in apprehending drunkards, and where the magistrates have been equally ready to convict; and, even then, it would be necessary to show that more drunkenness necessarily imports more drinking. It may be that individual cases of drunkenness may have no relation to the total amount of drink in a place. The really important question is, what is the total amount of wages consumed in drink in a particular place? how much is taken from the support of families to be spent in the public house? and what are the general results of this upon the condition of the working classes?

In the comparison of trade statistics of this and other countries, it is very common to find errors of the same kind, which often lead to most fallacious arguments. Statements have been recently widely circulated in the manufacturing districts, with the object of showing that England is losing its pre-eminence as a manufacturing country, as compared with France and other countries. For this purpose the value of the exports of England and France are compared. A careful consideration, however, of the method employed, shows, in the first place, that in the French exports are included not merely her manufacturing produce, but also her vast agricultural produce in wine, potatoes, fruit, poultry, eggs, &c., which account for nearly one-third of their total value, and from the British exports are excluded the value of our exports to India and our colonies, the exports to which are included in the French

return. In estimating the manufacturing position of England, there can be no possible reason for excluding her colonies, which are equally open to French manufactures as to her own. This alone makes a difference in the account of more than 50 per cent. of the total of French exports. In fact, any argument to be drawn from the figures used in this statement is absolutely worthless and misleading. The error has arisen from simply taking the French and English returns of exports to foreign countries, without examination of what is included in them.

Another illustration may be taken from the error recently pointed out by Mr. Giffen in his reports on the statistics of emigration. It might be supposed that nothing could be more certain and clear than such statistics; and so long as emigration was conducted in the old fashioned manner—as a kind of exceptional traffic—it was easy enough to ascertain the number of persons, who definitively left this country in any year, for the purpose of settling permanently in some non-European country. Of late years, however, the emigrants have been carried almost wholly by ordinary passenger vessels, and the returns have included ordinary cabin passengers, and a large number of persons who are merely going abroad as travellers, without any intention of permanently remaining away. Mr. Giffen has pointed out, that it is necessary to subtract from the number of outward-bound passengers, those coming to this country in similar vessels inwards bound. In 1875 the number of emigrants, including passengers, was 140,075. The number of immigrants was 94,228. The net emigration, therefore, was only 46,447. For the year 1876 the net emigration was reduced still further to 38,208, and the immigration from the United States actually more than exceeded the emigration thereto, being 57,697 against 54,554. The discovery of this error by Mr. Giffen vitiates many of the returns of late years; yet, notwithstanding that he has pointed it out for two successive years, I find that the number of emigrants is constantly being quoted and reported, without making any deduction for immigrants.

One other illustration I feel bound to add in justice to a friend, although it is one which will give rise to greater controversy than those I have already adverted to. It is the use made of statistics, in proof of the results of the Contagious Diseases Acts, by the medical officers, who are charged with the execution of those Acts. Mr. Stansfeld has shown in a paper read not long ago before this Society, how unreliable are the methods employed in the classification and comparison of these statistics, and how faulty and misleading the conclusions drawn from them. He did not indeed impute bad faith to these officers, but he showed how unsafe it is to trust to statistics, which have been prepared by those who are naturally inclined to

take the most favourable view of the results of their own labours, and who are actuated therefore by a strong professional bias. Time could not permit me to go fully into the case; I recommend the paper as an illustration of powerful analysis applied to statistics.

The difference of method of stating the results of the Acts, adopted by Mr. Stansfeld and the medical officers, is a good illustration how an argument can be supported by the mere method of statement. The medical officers, by omitting all reference to one class of disease, which it was the object of the Acts to prevent, but which it is admitted was not in the slightest degree diminished, and by concentrating attention only on the other class of cases, show that there has been a reduction of cases of this class of about 50 per cent., on numbers which before the introduction of the remedial measures were nearly 10 per cent. of the total force. This mode of stating the result is frequently referred to, as showing a saving of force to the army and navy of two regiments of soldiers, and of the crews of two line-of-battle ships. Mr. Stansfeld contends that the true method of showing the results of the Acts, which were intended to increase the effective of the military services, is to compare the average number of men in hospital before the practical application of the Acts from these diseases, with the average number after the Acts; and as the vast proportion of cases are very slight, the difference shows a result of not more than one-half to 1 man per 1,000 of the total force under the operation of the Acts; which gives a saving of 25 to 50 men in the army, and about 20 men in the navy. This result is so insignificant, that Mr. Stansfeld justly argues, there must be other causes at work, to neutralise the remedial effect of the Acts, and that the recognition, legalisation, and facilitating of vice, end in promoting it, and ultimately increase the very evils which it was hoped to reduce.

Many other illustrations could be given, if necessary, of the dangerous use which is frequently made of statistics. They afford sufficient explanation of the hesitation, which the public exhibits to accept statistical proof, concurrently with the increased use made of it in argument. It will be observed that in nearly all these cases the errors have arisen from neglect of the principle, already explained and laid down, that in the method of difference, it is essential for the argument, that other conditions should be the same. In comparing, therefore, statistics of different countries, and different periods, little value can be derived from the results unless, in the first place, identical methods and the same care of collection are followed out, and unless the other conditions surrounding them are either the same, or can be shown to have no relation to or influence on the phenomenon under observation. It is probable that as our statistical knowledge of our own and other countries becomes more

abundant, and the means of comparison of different periods and places more frequent, so in proportion, as more facilities are given for true scientific deductions, there will be an increased use of the same materials for hasty generalisation, inaccurate reasoning, and fallacious conclusions; and it will be increasingly necessary for such a Society as this, to be on its guard, and to secure for statistics their proper use and functions.

The observations already made will show clearly how necessary it is, in the compilation of statistics, to have regard to the use which can and will be made of them. Statistics collected in different countries or places, upon different methods, or varying classification, or with less care in their preparation, lose nearly the whole of their value, for any real comparison becomes impossible.

The growing conviction of the importance of statistical information, for the use of administrators and statesmen, as well as for statists and philosophers, cannot be better illustrated than by the fact, that almost every department of State in this Country, has now its statistical branch, which is engaged in noting the progress of its work, and in tabulating its results, with a view to comparison with the past and future.

Much of this work is done, without knowledge that other departments are engaged upon almost the same details, and without reference to the importance of identity of method with the returns of other departments on kindred subjects. There is therefore both waste of work and insufficiency of result from much of the statistical labours of the State Departments. This Society, therefore, will be glad to learn that the Government has lately appointed a commission to overlook all these separate statistical agencies, to reduce those which are redundant, or doing in different offices the same work, and to bring the others as far as possible into harmony with one another, so that the same methods may be used, and the results therefore made such as can be utilised to the best advantage. We may look forward with confidence to good results from such a commission.

Of statistical work recently undertaken and completed by the Government, it is only fair to notice the important information which is now supplied by the Local Government Board as to the local taxation, and the indebtedness of local authorities of this country. Such a return will grow in value from year to year, as it shows us the progress of local indebtedness, and enables us to judge of the practical efficiency and cost of our local institutions. Another most valuable return recently completed, which has been some years in progress, is that showing the various charitable endowments of England and Wales. It shows that the aggregate income of these charitable endowments is not less than 2,198,000*l.*,

of which 1,443,000*l.* is received in rent from 524,311 acres of land, and the remainder from stock and other personalty. Of this large income 664,000*l.* is devoted to Education, 202,000*l.* to Religious purposes, 552,000*l.* to Almshouses, 87,000*l.* to Apprenticing, and no less than 364,000*l.* to doles and distribution of money and articles in kind among the Poor.

The greatest, however, and by far the most important statistical work undertaken by our Government, or indeed by any Government in recent times, is that known as the Modern Domesday Book, a return showing for the United Kingdom the number of proprietors of land (including houses), and the names and extent of holding of all proprietors of land of above one acre. It appears to me that sufficient attention has not yet been given by the public, or even by this Society, to this important work, and that too much stress has been laid upon the errors, which have been detected in it, upon the defects of its information and method of arrangement, and upon the want of any complete analysis of it. It is possible, however, to over-estimate those defects, and to undervalue its substantial results. From all the inquiries I have been able to make, I am convinced that the errors are not so numerous or important, as to make any very material difference in its results; and I believe it would amply repay the labour which might be expended in analysing more completely its contents.

Bearing in mind the important objects of statistics, namely, first, the ascertaining of the present state of things; secondly, the comparison between different places at the same time; and thirdly, the comparison of the same place at different times; the return will supply us with much that is of immediate value under the first two heads; its value under the third head will, however, be obtained only in future years, when it may be possible to compare it with some future return on the same basis, and to deduce from such comparison what is the movement of land in this country.

Unfortunately we have nothing in the past, with which we can compare it, unless we go back to its prototype, the Domesday Book of the Conqueror. Compared with that, the present return must be admitted to be very deficient in information and wanting in value.

The more one looks at the original Domesday Book, the more one must admire the conception which inspired it, and the completeness with which it was carried out. It gives a complete picture and analysis of the territorial condition of England at that time, the number and relation of the various classes to one another, the nature of their different holdings of land, and the rent or services payable. What would not have been the value of such a return at every fifty or even hundred years, and what light should we have had upon the progress of society in this country? As it

is, from the Domesday Book of the Conqueror till the recent return, we have nothing but vague surmises and incomplete data, from which no reliable conclusions can be drawn as to the movement of landed property in England. There is almost the same absence of information of other countries. It is reported by Arthur Young, that anxious to obtain some idea of the extent of land under different kinds of cultivation in France, he marked out on a map as he drove through the country, in his prolonged tour, the nature of the cultivation, whether forest, common, vineyards, corn, &c., and that he then cut out the areas thus marked, and weighing them in the balance against one another, formed averages for the whole of France; and it is strong testimony to his care and patience, that the cadastral survey of France in 1810, gave results differing in no very great degree from that arrived at by this estimate. But this estimate had relation only to the nature of the cultivation, and not to the ownership of the soil of France, of which no certain facts then existed, and of which even now we have only estimates. Arthur Young, indeed, estimated that one-third of the area of France was then in the ownership of peasant proprietors; but how deeply interesting, and what a light would have been thrown upon the condition of France, upon the causes of the Revolution, and upon the result of it, if we had been able to compare a Domesday Book of it, before the Revolution, with others compiled after it, and at the present time. It is not merely the ownership of land at a particular time that it is important to know, but its movement; not merely that there are more or less owners of a different extent of land, but also whether the number is increasing or diminishing.

Is it true that in France the land is being constantly more and more subdivided, and that subdivision is reaching that point where it can scarcely be carried further? Is it true that in Great Britain and Ireland, except in the immediate neighbourhood of large towns, land is falling more and more into the hands of large owners, and is becoming more and more exclusively the luxury of the rich? This last is the statement, not merely of the opponents of our land laws, but of their advocates, and who defend them on the ground, that this movement is not so much the result of legislative restriction, as of economic laws, which inevitably tend in this direction.

The recent Domesday Book, imperfect though it be, enables us to form a fairly accurate measure of the actual condition of owners of land, and in combination with the agricultural statistics, shows what is the nature of the holdings of land. The grand total of 1,153,816 so-called landowners for the three countries, is reduced at once to most modest proportions by omitting all owners below one acre, who are, with rare exceptions, owners of houses, or even

lessees of houses only, for the return includes, as proprietors, all those who hold under leases of over sixty years.

From the total of 301,378 entries of proprietors above one acre, great reductions must again be made, and after deducting owners of house property, duplicate entries, holders of glebe lands, and corporate bodies, and charities, the most liberal estimate cannot put the number of landowners at more than 200,000, of which the owners in England are less than 170,000, of Ireland 20,000, and Scotland under 10,000.

It is interesting to compare this state of things with that of other countries. According to M. de Lavergne, of 7,600,000 heads of families in France, 5,550,000 are owners of land, two-thirds of whom cultivate their own lands.

In Switzerland, of 550,000 heads of families, 465,000 are possessed of landed property.

In Belgium M. de Laveleye states, of 4,100,000 inhabitants, 1,124,000 are owners of land. The numbers, however, appear to be excessive.

In Sweden, of 850,000 families, 200,000 are landowners.

In the United States of 7,200,000 heads of families, 2,600,000 own and farm their own lands.

In England, of 4,400,000 heads of families, only 170,000, or 1 out of 26, is an owner of land. In Ireland—a purely agricultural country, and a country of small peasant holdings—only 1 head of a family out of every 52 is an owner of land; and in Scotland the disproportion is still greater, for only 1 family in 84 is endowed with land.

The most striking feature which has been brought out by the return, is the difference between England and Ireland, more especially in the class of small proprietors. Ireland is the country where one would certainly expect, from the nature of its farming, and the instinct of its people, to find the largest proportion of owners. As compared with England, I have shown that it has only one-half the number of landowners in proportion to its population, and if purely agricultural districts only of both countries are compared, it will be found that for ten owners of land in England of between 1 and 50 acres, there is only one such owner in Ireland.

The value of these results, and the means they give us of comparison, will not be denied. I have called attention to them, not with the object of making any present direct conclusions; to do so would be to fall into the error, which I have pointed out, of the hasty use of the method of difference. The figures simply point out the expediency of further inquiry. Such great differences between England and other civilised countries cannot be without

their causes and their effects. To follow them out in all their bearings would be beyond my present purpose. It must be observed, however, that further information and greater detail is needed upon almost every point which arises, in tracing or endeavouring to trace these causes or effects. We have very little information as to the number of landowners holding different amounts of land in most of the countries I have named. We know little of the extent to which the larger landowners let their land to farming tenants; we know little of the productive results of large farms as compared with small farms cultivated by their owners, in countries where proprietors are numerous. Mr. Caird informed us in his recent address to the Social Science Association, that the average production of wheat per acre in England is twice that of France, that with five times the extent of land in wheat in France, they produce little more than twice the quantity. France, however, is not wholly a country of peasant proprietors, it is probable that nearly one-half of its area is let on farming leases, and there are nearly double the number of farms of over 100 acres in France, as compared with the number in England. The object of Mr. Caird's statement was to prove that the English system of large proprietors and large farms is more productive than the French system of small proprietors farming their own land.

The line of argument, however, appears to me to be defective, from failure to observe the conditions of the method of difference. To compare the results of the small proprietors of France with the large proprietors and large farmers of England, it would be necessary to separate the produce of the small proprietors of France from that of the large tenant farmers; to compare these with one another, and each with the English results. If it be found, as alleged by many observers, that the peasant proprietors of France produce relatively a larger amount of produce of all kinds, than the large farmers of that country, and that there is a greater difference between the average produce of large farms in France and large farms in England, the argument against small proprietors falls to the ground. It is on such points that more information is required, before we can draw a conclusion, as to the comparative results of systems so widely different as those of England and France.

Ireland has already been shown to be a country of small farmers. England is not wholly a country of large farmers. The number of its small holdings is very considerable. It would be interesting to know, but there are at present no means of ascertaining, how many of these small holdings are owned and cultivated by the same persons; in other words, how many instances there are now in England of the class formerly so frequent, called yeomen, and how many could be ranged under the class of peasant proprietors. Are

the numbers of such cases diminishing, and if so, at what ratio; and what is the cause of such a movement? Recent statistics tend to show that a smaller amount of agricultural produce is being raised from the land of the United Kingdom than a few years ago. The extent of land under corn crops has been reduced since 1870 by no less than 897,000 acres, or 8 per cent., and the number of cattle has been reduced since 1874 by 557,000, about 5 per cent., and the number of sheep by 2,606,000, or 8 per cent. What is the cause of this reduction, and how far is it likely to be carried further? These and many other questions of no ordinary importance, as bearing upon the progress of England and Ireland, and the condition of her cultivators, arise upon the figures I have quoted, and require the careful consideration of economists and statesmen.

If at the commencement of the address, I disclaimed for statistics the title of a science, I have shown abundantly that they cannot be studied, or even collected and arranged, without reference to the science, to which the particular facts under consideration refer, and most frequently therefore to Sociology and Political Economy. They must also be arranged and treated scientifically, that is with a view to their bearing on such science, and having constantly in mind the rules of logic, which supply us with the method for their use in aid of investigation and proof of the laws we are searching for.

I have also shown that the work before the Society is still far from accomplished, and that it may widen almost without limit, as we become more perfectly informed of the actual condition of our own and of other countries. Our motto then should be :—

"Nihil humani alienum putamus"

Nothing which we may gather together, bearing upon the condition of the human race, will be without its value, provided it be accurate in fact, and be studied and collated, in the true spirit of scientific inquiry.

Second *and* Concluding Report *of the* Ninth International Statistical Congress, *held in* Buda-Pesth, *in September*, 1876. *By* Frederic J. Mouat, M.D., F.R.C.S., *Foreign Secretary, Statistical Society of London.*

In my preliminary report of this Congress, read at the opening meeting of the past session, I brought down the proceedings to the commencement of the sectional work, and accompanied my statement with remarks on the organisation and procedure of the Congress as an international institution for the cultivation and advancement of statistical science.

My present and final general report is devoted to a summary of the work done in the various sections, and to recording, as succinctly as possible, the practical results of the deliberations of the Congress, on the numerous questions submitted for examination.

I have experienced considerable difficulty in the selection of the plan of condensing the report of the results of the work of each section, which appears to be the best adapted to convey a clear impression of the questions themselves, and of the resolutions arrived at, with the brevity and clearness necessary for their right understanding. On the whole, I deem it desirable to follow, in this respect, the report and resolutions as drawn up by M. Keleti, the actual president of the Permanent Commission. In this publication, the work of each section is treated separately, and kept distinct throughout.

To the first section, under the joint presidency of MM. Semenow and Hunfalvi, was assigned the consideration of the theory of statistics, population, and the statistics of large cities.

In the first category was placed the question of statistics as a branch of instruction in primary and secondary schools, and in the higher education of colleges and universities. This important subject has received a considerable amount of attention in some countries, more particularly in Germany, where the means of acquiring a knowledge of statistical methods are afforded to the *employés* of some of the statistical bureaux. The object of making it a special branch of education, however, goes considerably beyond this, and is designed to popularise a knowledge of statistical methods from the earliest point at which they can with propriety be introduced in education, to the highest standard of instruction,

when strictly scientific methods can be applied to the study of sociology and political economy.

The result of an animated discussion was, to discard it from primary schools, but to introduce it by cartographic, diagrammatic, and similar methods into all other educational institutions, gradually increasing the philosophic exactness of its treatment, so as ultimately to require a knowledge of statistics in all examinations for administrative services, and for the diploma of Doctor of Political Science—a degree as yet unknown to us.

As all the elements which enter into the constitution of statistics are not yet determined; as there are said to be some two hundred definitions of the word itself; as very many educated persons still decline to regard it as a branch of science; and as neither the men, the books, nor the other instruments of statistical instruction at present exist, or are accessible, much time must, of necessity, elapse, before effect can be given to this resolution.

It appears to me also to be open to question whether we are not already overloading the curriculum of study in nearly every branch of elementary, general, and scientific education, so as to reduce the acquisition of knowledge too much to a mere mechanical proceeding, in which the memory is exercised to the detriment of the reflective faculties, and the reign of Cram is extending its blighting and baneful influence.

The next subject of discussion referred to the basis on which exact tables of mortality should be constructed. Two learned reports were read by Messrs. Becker and Bodio, advocating different methods of treating the question, but each counselling greater minuteness and exactitude in the collection of the data, and greater care in the elimination of disturbing causes. Both methods appear to me to be too fanciful and difficult to carry into effect, and to be too speculative in their nature ever to be adapted to the rapidly fluctuating character of most populations, in this age of constant change and movement. I do not reproduce the exact text of the resolutions, as the question must, after all, be determined by the experienced administrators who are engaged in collecting the statistics of life and death in different countries; and who, even now, find it too difficult to get at the leading facts in the simplest form for analysis, record, and reference, to venture to introduce details and complications which would defeat their primary object.

The papers were somewhat polemical in character, and brought out a little too prominently the views of minorities, who, being defeated in the section, carried their contest to the General Assembly—a body which was quite prepared to accept any views, however speculative and impracticable. Accordingly, every conclusion presented was adopted by the said General Assembly—by

no means an inapt proof of the utter uselessness of submitting questions carefully considered and determined in Committee to a mixed body, of which the great majority know little, and care less for the whole matter.

The statistics of great cities were relegated to a sub-section consisting of a number of communal statisticians and representatives of great cities who were present at the Congress, and whose community of objects and subjects of investigation gave a close interest to their discussions. They hoped that in future Congresses this sub-section would be raised to the dignity of a separate section.

The special points considered by them were the finances of great cities, embracing every head of revenue, receipts (ordinary and extraordinary), and expenditure; periodical returns of the movements of population, including a correct estimate of the death-rate; and the sanitary statistics of towns.

Each of these questions will need a considerable amount of special inquiry, before any definite practical conclusions can be arrived at, as to the best means of collecting and collating the data desired. With respect to the first-named, it will be well nigh impossible to attain any fixed basis of comparison, so long as the relations of different forms of municipal government and taxation are unknown, and the most widely diverse social conditions of the inhabitants exist.

Regarding the second head, the following resolutions were adopted:—

1. The estimation of the mortality rate of great cities must be entirely based on the sum total of deaths, including in it strangers who die in hospitals, hotels, &c., as well as all deaths among the soldiery, which must be included in the mortality of the city whenever the information can be obtained.

2. The whole number of deaths must be brought into relation with the mean population of the year, calculated on the two preceding census returns, and on the arithmetic rate of annual increase.

The third subject embraced the provision of weekly returns of births, deaths, and their causes, the latter in considerable detail, as to the diseases and other sources of mortality, the different sections of the city in which they occurred, &c., &c.

A regular system of quarterly and annual returns, similar to those of the General Registry Office in England, was likewise advocated.

In the second section, presided over by M. Yvernès, the subjects of the relapses of criminals, and the international statistics of the registry of landed property and of mortgages, were considered and discussed.

A return to criminal courses is rightly considered the touchstone or crucial test of the success or failure of penal laws and of prison discipline, and the validity of the test can only be determined by a careful collection of the facts and figures connected with the trial and condemnation of criminals. The distinction between the part to be taken by statistics and that devolving upon Governments and legislatures in dealing with this important branch of judicial inquiry, was rightly drawn in the very practical report submitted by M. de Sterlich. After an animated and exhaustive discussion of the different aspects of relapse in its strictly legal and general relations, and the impossibility at present of attempting an uniform system of international judicial statistics, the following propositions were adopted:—

"The Congress expresses a hope that criminal statistics will be "made to provide the means of studying the movements of relapses, "and the influence of different penitentiary systems on the morality "of prisoners.

"It considers that to obtain this in a practical form it is neces- "sary:

"1. To adopt an exact and simple system of inquiry and record "of relapse. To this end the Congress again calls the attention of "Governments to the adoption of judicial rolls or registers (*casiers "judiciaries*) such as exist in France, in Italy, and in Portugal, or "of periodical registers such as are found in Russia. It is believed "that an interchange of conviction returns would add to the pro- "tection of society.

"2. To record by means of summaries of these registers annual "statements in an alphabetical form of all relapsed or reconvicted "criminals, their names, surnames, age, civil status, profession, "origin, domicile, degree of instruction, all antecedent sentences "(their nature and duration), the place in which they were under- "gone, the period, and the freedom from further pursuit.

"3. To cause to be drawn up by the directors of prisons annual "and alphabetical lists of all discharges from prisons, containing, in "addition to facts relating to the individual released and the "sentence suffered:

"*a*. The length of time passed in the prison.

"*b*. The occupation followed during imprisonment.

"*c*. That learnt or exercised during detention.

"*d*. The state of education on entering and on leaving the prison.

"*e*. Whether discharged by fulfilment of sentence or pardon.

"*f*. The amount of earnings given on release.

"*g*. The assistance given by prisoners' aid societies, before or "after release.

"4. To establish a certain conformity in the state of the re-

" convicted as detailed in the lists of the liberated, and to endorse " the sentences passed upon them since liberation.

" 5. To restrict inquiries regarding relapses to those who have " been punished with more than a year of loss of liberty, and to " those who have been set free in the year of observation, or in the " two preceding years.

" As to the heads of information which should be found in " criminal statistics, for the reconvicted, the principal are:—'

" 6. Sex, civil status, degree of education, profession, domicile " —town or country—age at first and last conviction, and first and " last offence.

" 7. For penitentiary establishments.

" *a*. Whether cellular or in community, industrial or agri- " cultural.

" *b*. The character of the establishment, public or private.

" *c*. Sex and age—men and women above 20 years: boys and " girls under 20 years.

" As respects each establishment, it would be useful to know " the total population on the 31st of December, and the number of " liberated. For these the duration of punishment undergone, the " amount of earnings made over on release, and lastly, for the re- " convicted, the number of times they have been caught and con- " demned since their liberation, and during the time indicated in " section five, the nature of the new offences committed, and the " result of the trials.

" 8. A similar record for adults and children, aided by discharge " societies, and for those who have had the benefit of tickets of " leave. The record of relapse in all that concerns these is of the " greatest importance.

" 9. As often desired by the Congress, criminal statistics " relating to relapse and prison discipline should be preceded by ' judicial notices to render them more exact and readily intel- " ligible.

" 10. The statistics of military tribunals should be added to " those of civil courts, in all cases relating to offences against the " common weal."

Having had considerable experience of prisons, prison registers, and criminals, during and after imprisonment, I am afraid that I cannot concur with the section in considering these resolutions to be either simple in character, easy to procure, or, when obtained, to apply to useful purposes.

I submitted to the section the far more simple and efficient system in use in Great Britain, which I was charged to present by Colonel Du Cane, but, as it is not even referred to, I presume it was either not understood, or not considered. I was unable to

remain in the section to explain it myself, hence probably the omission.

In some important particulars Great Britain is in advance of the rest of the world in matters connected with convicts and their management, and with the repression of crime, and we assuredly have little, if anything, to learn from France, Italy, Portugal, or Russia regarding them. Where personal liberty is so carefully guarded as it is amongst us, and none of the strange forms of judicial procedure which obtain in some of the countries referred to would be tolerated for a moment, it is surely worth the while of continental statists to study our forms, procedure, and records, more than they appear at present to do.

I was surprised to find in the corresponding section at St. Petersburg even eminent jurists unacquainted with the existence of the Indian criminal code, probably the most complete and scientific body of criminal law in existence. The code of criminal procedure of that country is likewise deserving of careful study, if our Congress ever hopes to be able to devise an international system of nomenclature of crime and of criminal statistics.

The report on the subject of international statistics of land tenure and mortgages points out clearly why it is impossible, at present, to deal with the question in more than a very general manner, so diverse are the systems prevailing in different countries in regard to the published records on the subject. It might have gone further and shown that a careful and exhaustive study of the laws regulating the tenure, transfer, and other conditions of landed property, in all countries, is absolutely necessary before anything like agreement as to the best means of obtaining and recording the facts relating to it can be hoped for. The subject is one, however, which should never be lost sight of in these international congresses, for there are few questions more intimately associated with the politico-economic condition of a country than that of land tenure. Instead, however, of dealing with so great and complicated a question in a full and comprehensive manner, embracing all particulars regarding it, I cannot help thinking that it would be better to treat it in a strictly analytic fashion, by separating it as far as possible into its component parts, and considering each separately. It will take several congresses to exhaust these in detail, and when this has been done it will be time enough to take it up synthetically, to bind up all in one comprehensive whole, and then lay down with some degree of authority the procedure best calculated to secure uniformity of record for international purposes.

As respects mortgages, the difficulty seems to me to be equally great, for until the laws and practices regulating them in different countries are clearly ascertained and placed on record, any figures

collected would have little real significance in an international sense. For these reasons I refrain from reproducing the resolutions of the Congress, as they will need much greater elaboration and discussion than they have yet received, before they can be accepted as guides.

The second and fifth sections were united to consider the question of the statistics of commercial and industrial joint stock companies, it having important judicial, as well as industrial and commercial bearings.

The vast development of joint stock enterprises in recent times, and the extraordinary frauds to which they are liable, as the records of our own criminal courts too painfully testify, invest this subject with exceptional interest. With it again is intimately associated the question of limited liability, which has given a fresh impulse and a new aspect to most commercial and industrial enterprises, but which is not without its dangers to the unwary and inexperienced. As the question was submitted for consideration by a master mind, and was treated by him in a memoir of remarkable clearness and close and logical reasoning, you will perhaps concur with me in considering that it would be as well to place on our records the detailed report and resolution of the combined section.

" Dr. Engel, the author of the memoir contained in the pro-
" gramme, having explained the leading idea which had guided him
" in his work, proposed to the Congress to vote the resolutions
" necessary for the detailed treatment of the statistics of industrial
" and commercial associations, which would also permit of a deeper
" study of the question, and make better known the true nature
" of the things considered, than was at present the case. As
" mentioned in his memoir, joint stock and limited liability
" companies have, in the last ten years, attained truly prodigious
" extension. As no member of the two sections doubted the great
" benefits resulting from collective enterprises, founded on the
" principle of the limited liability of the individuals engaged in
" them, so no one of them protested, when mention was made of the
" destructive loss occasioned by the increase of fictitious enterprises,
" or the ill success of a great proportion of joint stock undertakings.

" Considering the short time the joint section could give to the
" discussion, Dr. Engel proposed to eliminate from the question all
" associations or collective enterprises which were not joint stock or
" limited, so as to concentrate attention upon these exclusively.
" This manner of dealing with it was objected to. It was urged
" that co-operative and credit associations played an equally im-
" portant part in the economic life of nations; but in reply to this
" attention was directed to the resolutions of the Berlin Congress in
" 1863, when this question was considered in an exhaustive manner

" by the men most competent to deal with it, such as M. Schultze-
" Delitsch.

" Many members, who thought that detailed statistics of joint
" stock and limited liability companies ought in the first instance to
" be brought to bear upon the prevention of a renewal of the
" financial disasters from which we are still suffering fatal con-
" sequences, endeavoured to deduce as a corollary from that point of
" view, the idea that statistics as a preventive measure, would not
" only appear too late, but that, in a time of general panic, they
" would be of little use. They also thought that if undertaken by
" the State or by statistical bureaux, Governments, in the eyes of
" ignorant persons, would be exposed to the risk of sharing the
" responsibility of the acts of Societies, which it must include in the
" category of official statistics.

" In reply to these fears, it was alleged that the statistics of joint
" stock companies, would have no necessary connection with police
" or justice, but would be of the greatest importance as well for the
" public administration, as for the rest of the world, in showing how
" much of private fortunes, embarked in those enterprises, acted
" and reacted on the economic condition of the people, aiding in
" that way the public good. One competent member went so far as
" to express a belief that the Congress would injure its reputation
" if it passed a negative resolution, to the effect that the statistics
" of joint stock societies were superfluous or unnecessary.

" Several members proposed to adjourn the question, and to refer
" it back to the permanent commission to prepare a fresh report
" regarding it for the next Congress. But Dr. Engel energetically
" opposed this on the ground that it came from the permanent
" commission of 1873, and to refer it back to what was practically
" the same body would be a mild form of rejection. The majority
" adopted this view, when the following propositions were adopted,
" Dr. Engel being the reporter. These propositions were sub-
" stantially those of the memoir, with a few modifications adopted
" in consequence of the restriction of the discussion."

1. There is urgent need in every State for statistics of joint stock and limited liability associations.
2. Statistical reporters shall endeavour to obtain for each company or association the data indicated in Dr. Engel's formulary.
3. The data obtained shall be concentrated according to the groups and classes of the industrial census. A recapitulatory table, proposed according to a fixed formulary, shall present, with reference to the societies grouped together, the details of the individual bulletins.

4. The inquiry into these societies shall be renewed every five years.
5. In order that the statistical bureaux may be kept constantly informed of the creation of new or the dissolution of old companies, and that they may keep count of all important events relating to them, those societies shall be required by law to transmit, as quickly as possible, to the said bureaux, two printed copies of every printed notification issued by them.
6. The statistical bureaux shall take note of the value of the shares and other deeds issued by those societies. They shall publish annually the minimum and maximum value of the shares of each, with the dates, as well as the rate on the 31st of December of all shares, obligations, and other claims issued by them.
7. Statistical bureaux shall compare the results of the returns of joint stock and limited liability companies, with the corresponding results of industrial and commercial returns, so as to throw light upon the question of the increasing transformation of individual into collective enterprises.

The resolutions were adopted by a great majority of the members present, and were followed by the questionary form of returns required, which I am unable to bring within the limits of this brief review. It is very complete, and drawn up with Dr. Engel's usual care and judgment.

Much of what is here required is already done in England, either under or without legislative compulsion. It is by no means certain, however, that the published balance sheets and accounts of a large number of our joint stock and limited liability companies are so constructed as to render the detection of fraud or fiction easy, except probably in relation to insurance companies or benefit societies, if the latter come fairly within the designation.

The third section was devoted to public health, under the presidency of Dr. Rupp. It considered and discussed the question of epidemic diseases generally, and of cholera in particular, from a statistical and international stand-point. In these days of rapid movement and intimate international communication, it would be difficult to exaggerate the importance of an early knowledge of the origin of epidemic diseases with a view to prevent their extension. I have in another place, and before a society specially devoted to the study of epidemics, analysed the work done in this section. It will be remembered that at the St. Petersburg Congress these questions were relegated to a sub-section, and the Russian physicians promised to subject the resolutions adopted to careful

inquiry and application in their own country, and to report the result to the ensuing congress. Few, if any, Russian medical men put in an appearance at Buda-Pesth, and no report was submitted, which is, I think, much to be regretted.

The defect of the resolutions arrived at in the capital of Hungary, is their impracticability. While it is undoubted that details are the life of statistics, and that they cannot be collected with too great regard to accuracy; it is equally true that it is useless to overload any inquiry with a multitude of microscopic minutiæ, which are of little or no practical value, and which give even more trouble to analyse, than they do to gather together.

Moreover, in times of epidemics, and I can speak from experience, having passed through three or four of the most severe which ever occurred in the capital of British India, medical men are far too much harrassed with the heavy personal responsibility resting on them, to be able to make notes of all sorts of minute circumstances, necessary to a full understanding of such questions. They themselves are peculiarly exposed to the cause of epidemics from their constant contact with the sick and dying, and need a certain amount of rest and relief from the wearing exhaustion entailed by the making of minute records, after a hard day's work at the bedside, to enable them to go through the exertion required from them.

From such returns should, therefore, be excluded all that cannot be shown to offer some reasonable prospect of throwing light upon the origin, progress, and treatment of the disease. More than this it is idle to attempt, and visionary to hope to obtain.

The statistics of baths and mineral waters were also considered in the same section. The question is one of limited interest, and the therapeutical value of these agencies appears to me to be considerably over-rated on the continent of Europe. They are more often pleasant than profitable places of health resort, and the information regarding them which is contained in some of the special works devoted to balneology, seems to me to be quite sufficient for all present practical purposes.

It was scarcely deserving of the dignity of a special subject of discussion in the health section, which would be better occupied in the far more important, extended, and difficult field of therapeutical statistics generally, upon which there is little reliable information in existence.

Indeed, if the health section is not more carefully regulated in future, and its labours devoted to questions of pressing importance, and they are not treated in a plain, practical manner, without the introduction of microscopic details of which it is difficult to see the purport, or to estimate the value, it had better be suppressed.

Medicine is essentially a science of observation, and requires more rigorous exactness in the collection and examination of its facts than almost any other branch of art or science. Some of the greatest of its own cultivators, have stated that it contains more false facts than erroneous theories; and it is by no means creditable to us that we do not, even at the present moment, possess a thoroughly reliable body of hospital statistics, to determine whether the aggregation of the sick in large numbers and in great buildings, is a blessing or the reverse.

To the fourth section was assigned the question of agriculture, sylviculture and agricultural meteorology, all subjects of considerable importance and permanent interest. The information regarding crops and agricultural products generally is at present extremely vague, and difficult to condense and utilise for practical purposes. Uniformity of practice in the collection of the data, and the intervention of the State in exacting all that ought fairly to be required from farmers, landlords, and others engaged in the food supply of nations, is clearly legitimate. Our own returns contain a great deal of valuable information, but I am not sufficiently familiar with the question to be able to express an opinion as to whether they might not be improved, or in what direction change is required.

The periodical recurrence of famines in India invests the question of agricultural meteorology with exceptional interest to us. Great Britain herself being at all times dependent for a considerable portion of her food supplies upon other nations, a wet or a dry season, and a rich or a poor crop, simply means cheapness or dearness of food, and greater or less local distress, or the reverse; but, in India it signifies life or death, in the appalling measure exhibited in the famine now drawing to a close in Southern India, and on no less than three previous occasions within my personal knowledge.

The resolutions of the Congress, simple and practical, were as follows:—

"1. The Congress recommends to the Governments of all "countries, to cause the collection of special meteorological "observations in connection with agriculture, to be sub- "mitted to a central authority, elaborated and published "regularly by the State, or by scientific associations.

"2. The Congress requests Governments to have regular "monthly reports submitted by special agents (crop re- "porters) on the state of the cereal vegetation of their "districts.

"3. The Congress recommends Governments to take steps to "secure observations regarding the influence of destruction "of forests and replanting, on climate.

"4. The Congress hope that observations regarding storms, "hail, and periodic phenomena relating to plants and "animals, should be gathered at as many points as possible "in each country, and that the result of these observations "should be centralised, co-ordinated, and published.

"5. The Congress likewise trusts that a certain number of "meteorological observatories should be in telegraphic com- "munication internationally, to transmit weather prog- "nostics, useful alike to agriculture and commerce. Those "observations should be immediately made known to the "crop reporters, and a knowledge of them spread abroad, "to prevent the effects of frosts, inundations, &c.

"6. The Congress charges the permanent commission to com- "municate their proposals to the Meteorological Congress "to be held at Rome in 1877, and in the event of agree- "ment between the permanent commissions of the two "Congresses, to submit the definitive wishes of this "Congress relative to agricultural meteorology, to the "Governments of different countries."

Much, indeed the greater part, of this is already done. In India there are special meteorological, forest, and agricultural departments, and crop reports are regularly submitted to the central authorities by the collectors of districts, and published in the official gazettes. I doubt, however, if the latter are collected by sufficiently skilled and accurate subordinate native agents to be of much use, as when I was in India, the revenue returns and market values were certainly not characterised by remarkable accuracy in Lower Bengal.

With respect to agriculture, I suspect that the Indian forest returns already contain a larger amount of information than is required by the Congress on the subject, but I have not had time to compare them.

The fifth section, devoted to Industry, was under the presidency of MM. Bouschen and Engel, and discussed the questions of house, home, or family industry; the statistics of institutions created in the larger industries for the benefit of the labouring classes; and of deaths and accidents in factories, resulting from the nature of the work, with assurance against these accidents.

It would be vain to attempt to condense the work done in this section, in the necessarily restricted limits of my report, for it was well and thoroughly done; indeed, I venture to recommend that it be translated *in extenso* and placed in the Miscellanea of a future number of our *Journal*, if room can be found for it. Now that questions regarding capital and labour are so thoroughly and unhappily to the front, and so many economic fallacies are sown

broadcast among the people, it becomes almost of national importance to collect correct and detailed data of all the facts and circumstances connected with the working classes, which have a direct bearing on their well-being and social relations, for their own information and guidance, and to direct legislation regarding them into sound and healthy channels.

When I mention that the chief reporters are Drs. Mayr and Engel, their names alone are guarantees of the value of their work. Among the questions are the mode of payment of salaries, savings banks, mutual aid (benefit and friendly) societies; diseases, disability, and deaths, among workmen; statistics of accidents, and insurance against them, and inability to work, which shows strikingly the extent of the field covered, and the importance of the interests involved in this branch of international statistics.

The last or sixth section was that of commerce and transport, in which was discussed the question of the best method of drawing up a general schedule and table of external commerce, and the statistics of railways and movement of internal commerce.

The former question was advanced a step beyond that reached in previous discussion of the subject, and a more complete list of articles of trade than had yet been published was produced.

But, without pretending to possess any special knowledge of trade returns, the system recommended appears to me to be much too complicated for general adoption, and to be difficult of adaptation to the mercantile transactions of different countries.

The subject of the statistics of railways and the movement of internal commerce, was relegated to a strong sub-committee for future consideration and future report. The tables contained in the memoir on the subject of railway statistics, separated from the movement of merchandise, by Mr. Giffen, were specially commended on account of their brevity and conciseness—qualities so seldom exhibited in any section of the Statistical Congress, as to merit the exceptional notice they received.

As this ends the proper business of the sections, and of the *compte rendu* of their reports and conclusions, I shall here close my brief review, without specific mention of the extraneous matters submitted to the General Assembly, and not contained in the programme of the Congress. The business of the International Congress should, I submit, be strictly confined to the questions agreed to be discussed, and not permit of the introduction of any extraneous matter whatever.

Two of the papers contained in this appendix do not, however, come within this category. The report of M. Yvernès on the progress made in the collection of international statistics, as settled by the Congress held at the Hague; and the reports of MM. Levasseur,

Mayr, and Ficker on the graphic exhibition—are documents deserving of careful study by all interested in the progress of statistical inquiry and research.

It is, I think, matter of much regret that room was not found at this Congress for the consideration of the statistics of treaties of commerce, as proposed by Professor Leone Levi. Some of these treaties were on the eve of expiry, and in regard to several there were such evident signs of a retrograde policy, as to have rendered it exceptionally interesting and important to obtain the views of the eminent statists of all countries assembled at Buda-Pesth, on the true principles of a sound and wise commercial policy, based on the results of the returns already obtained. The eminently injurious manner in which restrictive measures are applied, even to the smallest transactions of life, is so utterly opposed to progress and its resultant prosperity, that the most elementary principles of commercial enterprise and social success are evidently as little understood in some countries, as are the true relations of capital and labour by most of our trade unions.

The net result of the last congress may, I think, without any disparagement of the pains taken, of the earnestness exhibited, and of the intelligence displayed, be summed up in a very brief formulary, viz.: that by undertaking too much, comparatively little was accomplished. It was a matter of somewhat plaintive regret in some sections, that the time allowed was quite insufficient for the discussion of the questions submitted; and one section actually begged, as a favour, from the organising committee, that the formularies submitted for its consideration should be put into the official language of the Congress in the *Compte Rendu*. This request was submitted by and through the reporter—one of the most distinguished members of the Congress, who was himself the offender in the matter.

Several matters which occurred at this Congress are calculated to call into question the usefulness of these international assemblies, and to make it desirable to inquire why the immediate and visible influence of the Congress in the advancement of statistics, is so small as to be almost imperceptible. The question is too large to discuss at the fag end of my report. My own belief is that it is mainly due to the Congress undertaking too much at each of its meetings; to the eminently unpractical and impracticable form in which many of its resolutions are submitted; to some errors of procedure; to the necessity of carefully digesting all existing statistics in each branch of inquiry, so as to know what we actually possess before we attempt to obtain more; and to determining what really constitutes Statistics, of which Dr. Engel states that no less than one hundred and eighty definitions exist.

The example of the illustrious Quetelet in the treatment of

statistical questions, may safely be recommended for imitation to all statists, for it is but another illustration of the soundness of the inductive philosophy which has caused all branches of physical inquiry to make such rapid advances in our own time, and which is now being applied with similar success to the solution of social and economic problems.

Concluding Remarks.

Having thus very briefly brought before you the heads of the work accomplished by the last International Statistical Congress, I again submit for your consideration my proposals for a change in its practice and procedure, with a few remarks on each. I see nothing to alter or modify in them. You will have gathered from my present report, that I consider the programme of the Congress to be too ambitious; that it attempts to accomplish too much, and that it would be better to restrict its attention for some time to come to such subjects as are of pressing and primary importance, and to digest and utilise the vast amount of crude but valuable material now in existence, which is practically lost from its scattered form and absence of arrangement.

My proposals are as follows:—

Proposition 1.—The programme of each Congress shall be prepared by the organising committee, in consultation with the leading statistical authorities of the place selected for the ensuing meeting. This programme, when finally settled, shall be printed and circulated to all statisticians and statistical bodies likely to take part in the congress, at least six months before the appointed time of meeting.

No change shall afterwards be permitted in the subjects selected for discussion, or in the sections into which they shall be divided for consideration.

It seems to me to be very desirable that the programme of each congress should be prepared by the permanent commission for the following reasons:—

The permanent commission has charge of all the interests of the congress during the intervals of their sittings. They will of necessity in the discharge of their important functions be well acquainted with the progress of statistical research and inquiry in all the countries represented by them. They will know in what exact direction further inquiry is necessary, and will in consequence submit to each congress only such questions as are of pressing importance, or need early solution. Much of the time of every congress seems to me to be devoted to the consideration of questions which are of limited interest and importance, and have no strictly

international bearings. The more limited and well defined the work attempted by each congress, the better and more thoroughly it will be done.

When all the great leading lines of inquiry have been exhausted, and an agreement has been come to for their international treatment on a uniform basis, it will be time enough to consider the detailed elements into which each may profitably be subdivided. That time is still far distant, and until it has arrived I am strongly of opinion that the strength of the congress should be applied to such subjects only as are of primary and immediate importance. The world generally is not yet sufficiently instructed to estimate statistical research at its true value, and until its results are presented to statesmen and those who direct and control legislation in all countries in such a form as to be readily mastered, it is vain to expect that much progress will be made in their practical application to the well-being of civilised communities.

The chief officers of the organising committee should, if possible, I think, be associated with the permanent commission in the preparation of this programme, in order that local questions of special interest and importance may be introduced into it. It is undoubtedly desirable to secure the active and intelligent co-operation of the statisticians of each country in which the congress is held, and I know of no better means of attaining this object than that suggested above. By this means, the resources and various other matters of national importance of each country will become better known to all, and assuredly they can no where be studied with greater benefit, than in their respective countries. The relation of its institutions to the social state of a country is direct and immediate, and there is no nation so far in advance of the rest of mankind in the age in which we live, as not to be able to profit and derive lessons of wisdom and tolerance from its neighbours. Apart from all this, is the feeling of amity and good will that is the invariable result of free and friendly intercommunion in such common objects of scientific interest.

Proposition 2.—All purely local arrangements for the Congress shall be made by the organising committee, to whom shall be entrusted the duty of giving effect to the programme already settled. The president and secretaries of the permanent commission shall be, *ex-officio*, members of the organising committee.

The object of this proposal is to keep the work of local organisation and arrangement entirely distinct from that of the permanent commission, and thus to prevent the confusion and uncertainty inseparable from the procedure of the present *avant-*

congrès. The local work is itself sufficiently heavy to occupy the whole time and attention of the local committee, and it would be considerably facilitated by the removal of the matters which have occupied the attention of the permanent commission during the preceding two or three years, and which demand more careful study and consideration than can be possibly given to them on the first assembling of the members of the congress.

The duty of carrying into effect the programme detailed by the permanent commission, would naturally devolve upon the local or organising committee, as it would be a strictly executive function. The presence of the president and secretaries of the permanent commission as *ex-officio* members of the organising committee, would secure the right understanding of the programme itself, and prevent the delay and confusion caused by the rediscussion of questions already definitely determined. The permanent commission would thus practically be in abeyance during the sitting of the congress, except as a consultative body in case of need, and would only resume its functional activity on the termination of the congress, when it would be reconstituted in accordance with the resolution adopted at St. Petersburg. Some such division of duties and responsibilities seems to me to be absolutely necessary in the altered constitution of the congress, to secure its harmonious and effective working.

Proposition 3.—All printed papers, discourses, and other documents intended for submission to the congress and for general distribution, shall be made over to the local secretaries, who shall be charged with their distribution, and shall prepare a printed form of receipt for signature by each person to whom the said papers are made over.

To those who witnessed the waste and the absence of order and method in the distribution of books and pamphlets at Buda-Pesth, the necessity of some such rule will be obvious. Many of the documents submitted to each congress are of permanent interest and value, and have cost considerable sums of money to print. It is not right or decorous that the members of the congress should have to scramble for them, and it is worse than wanton waste that they should fall into hands which *can* make no proper use of them.

A complete series should be collected for each member of the permanent commission, and for the acknowledged delegates of every statistical society represented at the congress. All surplus copies should be distributed among the remaining members of the congress in the order of their personal applications in writing, addressed to the secretaries of the organising commission. The formality of a

receipt would be a sufficient guarantee that the documents had really reached those for whom they were intended.

Proposition 4.—Official delegates shall consist of all statists accredited by their respective Governments, and of such members of statistical and other known societies, as may appoint them to be their representatives. The latter shall enjoy all the rights and privileges now accorded to the former.

The question of official delegates, their status, functions, and privileges, has been discussed in great detail at several of the congresses, and they have not been placed in their present position without much anxious thought and care. I venture, therefore, to re-open the question with much diffidence. Still the present practice appears to me to be liable to so many objections, and to fetter the action of congress so greatly, as to require reconsideration.

Considering the exceptional position occupied by official delegates, and the subordinate place assigned to all other members of the congress, I am of opinion, either that the number of official delegates should be limited to the representatives of sovereign States, or that their privileges should be extended to the accredited representatives of all recognised statistical societies as well.

Whatever may be the practice of continental States, official delegates from England in no way represent the Government of that country, inasmuch as no action can be taken on any matters submitted by them, except through the legislature of the country.

Again, the accredited members of statistical societies are entitled to more consideration than is at present shown to them, inasmuch as they pay their own expenses to the congress, and on their return to their homes can exercise a much wider influence on the opinion and action of their respective countries, than any other members of the congress, through the publications and discussions of the several societies which they represent.

I know of no valid reason why they should be excluded, as they are practically at present, from the various offices in the different sections, in which some at least of them could do good and efficient service.

So strong was the feeling on these points entertained by many of the English members at the last congress, that I feel sure that few of them will attend again, if some concession be not made in this direction.

The formation of the permanent commission has really changed the relations of the congress to the whole question of international statistics, and it would be well if the constitution of the congress

were now carefully re-considered, with special reference to this great and important change.

Proposition 5.—Previous to the assembly of the sections each day, a discourse on some branch of international statistics shall be furnished by some eminent statistician, selected by the permanent commission. This discourse shall be written in the official language of the congress, and shall be printed for general distribution, in the same manner as now obtains in the British Association for the Advancement of Science.

This is a new, and I venture to think by no means an unimportant feature of congressional work. Every scientific man in Europe is so well acquainted with the practical working of all scientific congresses, that the nature of the proposal needs no detailed exposition. For statistics, an authoritative view of each section of inquiry by a statist of eminence, will become one of the most important landmarks in the science, and in the entire absence of text books on statistical inquiry generally, as a branch of political economy and sociology, will give an impulse to the study which is much needed. It will greatly increase the interest of the congress itself, and tend more than anything I know of to advance the scientific study, practical application, and popularisation of statistics as a branch of science. Until in fact it has been shaped into something of a scientific form, this will be the best of all schools for the teaching of statistical methods.

Proposition 6.—The rules regarding the languages to be used, the length of speeches, and similar matters, shall be strictly enforced by the presidents of sections.

This rule is, I also think, very necessary, for unless exactness and regularity are observed particularly in the use of the languages allowed, confusion is certain to occur. The official reporters should be only for the languages sanctioned, and those who wish their speeches or communications to be incorporated in the transactions of the congress, should have them translated into those languages. At the Buda-Pesth Congress, while the resolutions communicated to the general assembly were in French, long discourses in other languages explaining their purport were allowed. This I hold to be a grave irregularity, which should not be permitted to recur, for obvious reasons. Indeed in some of the most important sections nearly everything was done in German, and one section had to beg of the organising committee to turn its proceedings into French.

Proposition 7.—All notices of deceased members shall be pronounced orally, and shall be in the official language of

the congress. This shall not prevent the distribution of written memoirs, should such be prepared by any member of the congress. These memoirs may be in any of the leading European languages preferred by the writer.

This, I think, is a necessary rule. The time of the congress is very precious, and will not permit of the reading of long written discourses with advantage. Oral addresses are always more animated and interesting than didactic discourses, and there are very few men of whom and their works an accurate outline cannot be given *vivâ voce* in a quarter of an hour. For permanent record, a more detailed analytical biography is no doubt desirable and requisite, and this is duly provided for in the second portion of the proposition.

Proposition 8.—The reports to the general assembly of the results of the deliberations of the sections, shall be strictly confined to the resolutions adopted by those sections after discussion, and shall be in the official language of the congress.

If the proceedings of the congress are properly reported from day to day, explanatory remarks on the resolutions adopted will be unnecessary. The great disadvantage of the present procedure is that it allows a reporter to introduce controversial matters into his remarks, which are altogether out of place in the general assembly, and occupy time and attention unprofitably.

It is most important that the resolutions of the congress should be correctly apprehended before the congress breaks up, and this, it seems to me, will be best accomplished by keeping them free from all extraneous matters.

Proposition 9.—The *procès verbal* of these resolutions shall be prepared, and, after being reported to the general assembly, be published at once by the secretaries of the congress for general distribution, in the same manner as the daily bulletins. These resolutions shall not be discussed by, nor submitted for the votes of the general assembly.

Very great practical inconvenience is at present caused by the unavoidable delay incurred in preparing the *procès verbal* of the final resolutions of the congress. By the adoption of the above proposal it can be prepared at once, and each delegate can carry it away with him, and consider it while all his impressions are fresh. The advantage of this course is so obvious as to need no further exposition.

The detailed *compte rendu* of the whole proceedings of the

congress can then be prepared with the care and deliberation necessary in that which will become matter of history and permanent record.

Proposition 10.—At the conclusion of the congress, the resolutions adopted shall be dealt with by the permanent commission, in such manner as the members of that commission may deem to be best fitted to advance the cause of statistical science and research in their international relations.

This is the most important consideration of all, for upon the careful working of the permanent commission will depend the future success of the international congress itself. Much of the past labour of that body has been without practical result, simply from the absence of an authoritative analysis and continuance of its work by a competent tribunal. This link is now supplied, and ought in the future to secure the presentation to every country represented at the congress, of the result of its deliberations in a plain and practical form.

In no other manner are its labours likely to find acceptance in Great Britain and her vast dependencies, where the people to a great extent govern themselves, and all legislative measures are subjected to careful public scrutiny and examination before they are submitted to the governing bodies, with whom they are not likely to find acceptance unless they are approved by the public voice.

Discussion *on* Dr. Mouat's Report.

Professor Leone Levi said, that having had the honour of attending nearly every session of the International Statistical Congress, he should like to make a few remarks on the report which had been presented by Dr. Mouat. He thought that the world had been greatly benefited by the organisation of such a congress. He believed it had given great impetus to statistical science, and had considerably enlarged the field of observation, as well as rendered that observation more reliable, the facts being more carefully collated. So far as England is concerned, the publication of our judicial statistics in their present complete manner, is decidedly a result of the International Statistical Congress. He would further say, that to the organising commission of the Congress at Buda-Pesth, as well as to the organising commission of St. Petersburg, Florence, and other places, they were greatly indebted. He believed they had taken all along enormous pains, not only to prepare the programmes as carefully as possible, but also to provide for a reception worthy of the occasion and of the learned statists from all parts of the world. The criticism which Dr. Mouat had given of the proceedings of that congress was, to a certain extent, true; at the same time, he did not concur in the statement that such congresses, and especially the last session at Buda-Pesth, had done nothing. The labours of any one session of the congress must be taken in connection with the labours of all preceding sessions; and he thought the Buda-Pesth Congress could not fail to exercise a considerable influence upon the further elucidation of many difficult matters. The programme as stated by Dr. Mouat, was far too voluminous, and was distributed at too late a period. At the last Congress at Buda-Pesth, some part of the programme was only received during the sectional meeting. This, of course, was a very great want, because the field of research being so vast, members who were expected to contribute, could not be expected to come provided with the necessary amount of information, unless the programme came to their hand in sufficient time to study the subjects carefully before they went to the meetings. He thought the suggestion that the preparation of the programme should be entrusted to the permanent commission, a valuable one. As it was, the Statistical Commission of Buda-Pesth had to resort to Germany and other places for the preparation of parts of the programme. The last programme was partly in German and partly in French. There were two or three papers on each subject, and there was evidently a want of unity in the whole. If the permanent commission undertook the preparation of the programme, this inconvenience, to a certain extent, would be removed. Dr. Mouat suggested that the unofficial members of the congress should be placed on the same footing as the official members. This had been

a great difficulty at all the meetings, and it arose, he believed, from the very structure of the congress. If he understood it rightly, the International Statistical Congress was primarily a congress of official members only acting with the co-operation of unofficial ones—statisticians of all countries—thus combining the actual labourers of the statistical bureaux with private students of statistical and economic science. Unofficial members had reason to complain that in some instances, especially of official receptions, they found themselves excluded, but that arose from no other account whatever, except from the strictly constitutional character of the congress, and also probably from the limited power in some cases of extending the largess of hospitality. It was, however, desirable that this anomaly should be, as far as possible, removed, and that official and non-official members should be placed upon an equal footing. He was afraid that the proposal of having discourses delivered every day on some branch of statistical science, would not be acceptable or practicable, because they would take up so much time. They would consume an hour and a-half of each day of the few hours that were at their disposal. The congress did not profess to teach the theory of statistics. Its object was to develop the science of exposing statistical facts. If general discourses were prepared, they might be printed and distributed, but not delivered, because there would be no time for the purpose. The matter of language was certainly a great difficulty at such congresses. When it was considered that in dealing with scientific questions we must use scientific and technical terms, it would be seen that to understand well the real import of each word was of the greatest value. When, therefore, languages were spoken which were but imperfectly understood, or altogether unknown, it was perfectly absurd to vote upon the insertion of a statistical word which might have a perfectly different meaning in the mind of different members. The question of language was a *sine quâ non* for the success of the congress, and never did he see the difficulty more conspicuously illustrated than at Buda-Pesth. In other places French was much more spoken, and was, to a great extent, the official language; but at Buda-Pesth the large proportion of Germans present at every section monopolised the whole, and those who were not well acquainted with German were shut out altogether from taking any practical part in the discussion. Dr. Mouat had suggested that the reporter from the sections to the general meetings should confine himself to the resolutions. Professor Levi felt that could not be, because it was needful that the resolutions passed by the section should be explained to the congress. He did not think that the mere reading of the resolutions would be sufficient for the congress. He thought, however, that it would be very desirable that the resolutions should be printed in the bulletin of the congress, at least, on the morning before they were put to the congress. Unless such resolutions were printed beforehand, no one could give an intelligent opinion on their merit. As it was, the proceedings of the general congress were of little value, indeed, the real value of the congress consisted in the labour of the sections. The carrying out of these resolutions did not rest with the congress,

but with the Governments to which the resolutions were communicated; and it was to be hoped that the permanent commission would exercise considerable influence upon such Governments in that direction, and that it should see that they were carried out. It was much to be regretted that a large number of the recommendations of the congress passed unnoticed by any Government—the English Government included—and in that manner a great deal of labour was lost; but if the permanent commission were more vigilant in pressing them on the attention of the different Governments, much more benefit would accrue from the congress to the nations generally. Dr. Mouat regretted that his suggestions that the congress should appoint a commission to report on the statistics illustrative of the operation of the recent treaties of commerce had not been acted upon. From a letter received from M. Keleti, he hoped the permanent commission would deal with it at its first meeting. When the Allied Powers met in congress for the negotiation of the Treaty of Vienna in 1814-15, a committee of statists was appointed to report on the statistics of population and area of the countries to be dealt with in the new political arrangement, and he did not see why, in the negotiation of treaties of commerce and other economic questions, statisticians should not be asked to give the facts of the case in a plain, scientific manner. He thought such a suggestion might be of advantage to all States. He was sure they all felt much indebted to Dr. Mouat for the valuable paper with which he had favoured the Society.

Mr. Newmarch considered that Dr. Mouat had done the Society a great service, and the modern invention of statistical congresses a greater service still. He jocularly described Dr. Mouat's propositions as a new "ten commandments," and a fitting addition to the decalogue, and said that they ought to be made equally obligatory. He was glad that there was any gentleman at Buda-Pesth who had his wits so much about him as to be able to criticise the elaborate machinery that these statistical congresses represented. He had no animosity to these assemblies; he had assisted in a very subordinate capacity at two of them, as one of that branch of unofficial members who had been referred to, therefore he had some personal knowledge of what took place. He wished to know, after the lapse of twenty years, what was the net result of these conferences. He could not see that any large amount of practical good had resulted from them. Dr. Mouat had said that the great defect of these congresses was the enormous amount and the torturing degree of detail into which they entered. That was exactly the impression made on his own mind from what he had seen and read of them, and that was the reason why they broke down. As for any civilised or sensible Government carrying out the extravagant conditions and preposterous recommendations of these congresses, it was perfectly impossible. It was beyond the province of a Government, which simply existed for practical purposes, to become a mere machine for settling questions. There ought to be good resulting from these congresses, if statistics were to accomplish anything like the benevolent purposes which the president had

sketched out. He conceived it to be a matter of deep regret that these congresses had been going on for twenty years, and that so little had come out of them; and for his own part he had no hesitation in saying that they had failed in their object, because they had gone beyond all reasonable bounds, and had not hit upon the right machinery; the actual arrangements being exceedingly ill adapted to accomplish the purpose intended. Nothing could be plainer, for example, than that the programmes of these meetings should be carefully prepared beforehand; that they should be rigidly confined to a few subjects; and that the whole purpose of the congress should be directed to work out this particular purpose. Instead of that, the programmes were only distributed close upon the assembling of the congress, and at Buda-Pesth the programme, it appeared, could not be had until it had almost ceased to be of value. He thought, also, that a great deal of time was wasted in passing eulogies on departed members. The business of the congress was not with people who were dead, but with people who were living. He characterised the congresses as international picnics, and hoped that more good would result from them in the future than had come out of them in the past. As regarded the subject of treaties of commerce, to which his friend Professor Leone Levi attached much importance, he begged to say, with all deference to his friend, that the most fitting way of disposing of treaties of commerce, would be to bury them at the most conspicuous cross roads, and drive a stake through the whole corpus of them. He begged pardon for dealing with the subject in a jocular spirit, but the time had come when a little good natured ridicule would be wholesome after twenty years of solemn trifling.

Mr. Cornelius Walford, while concurring in a great deal that had been said by Dr. Mouat and Mr. Newmarch, pointed out that there was another side to the question. The official programmes which were prepared for these congresses, however late they might appear, contained a vast amount of information of the utmost value, and were useful to statisticians and heads of departments for reference in after years. He had found this in his own experience. They might do more good, however, if they were compiled with more precision, and issued with greater punctuality.

Dr. Farr, after referring to the origin of the congress, made a few remarks on the paper, which it was impossible to discuss adequately after the president's exhaustive address, on account of the lateness of the hour. He had not been at the last meeting at Stockholm of the permanent commission, but he had attended the congresses since their commencement, and he differed entirely from what Mr. Newmarch had said as to their usefulness. Nothing was easier than to question the usefulness of any one of our institutions. A small committee of the British Association had actually questioned the use of the statistical section. They all knew, however, that some Englishmen could always be found to call anything into question; but the president, in his address, had defended the utility of statistics in the strongest manner possible. If those who

were engaged in compiling official statistics throughout Europe, were asked to endeavour to agree to make their returns uniform, was it unlikely that they would be useful ?

On the motion of the President, seconded by Dr. Farr, a vote of thanks was accorded to Dr. Mouat for his report, and the proceedings terminated.

Extracts *from the* Address *of the* President *of* Section F, "Economic Science *and* Statistics," *of the* British Association *for the* Advancement *of* Science, *at the* Forty-Seventh Meeting, *held at* Plymouth, *August*, 1877. *By the* Right Hon. The Earl Fortescue.

We make room for the following extracts from the President's address at the last meeting of the British Association:—

I will take one striking example of the subsequent large modification, not to say reversal, of the earlier views of political economists, owing to the deeper reflection, and especially the wider information brought to bear upon the question by, in the first, one single eminent authority among them.

Malthus, in his famous work on Population, lays it down as a law that while population naturally increases in a geometrical, subsistence increases in an arithmetical progression only. He was followed in this view by a great majority of the political economists of his day. And Mr. J. S. Mill, in the last edition which I have seen (that of 1862) of his "Principles of Political Economy," says, "Having a large family, so far as concerns the public interest, "is a thing rather to be discouraged than promoted;" and again, "That the producing of large families ought to be regarded with "the same feeling as drunkenness or any other physical excess." Such writings led men to believe that wars and pestilence were sharp but salutary remedies for the great evil to be feared, namely, over-population, and were the sad but indispensable supplements to the inadequate operation of what Malthus and his school called the preventive checks of prudence and morality. We have, indeed, recently had, professedly based on Malthus's doctrines, to which public attention has been recalled, a preventive check of immorality propounded. But on that I need say no more now than that, however plausible it may sound, it would be sure in the long run to weaken the national strength and impair the national well-being, by lowering the national standard of duty and degrading the national character. History shows how true it is that "righteous-"ness exalteth a nation, while sin is a reproach to any people."

But to return to the warnings of Malthus and his school against the danger of over-population. They founded their views almost entirely on deductive reasoning, without appealing to any adequate amount of actual experience, and therefore failed to take into

account what, in most cases, practically modifies, and even neutralises, the action of the principles which they set forth.

Mr. Chadwick demonstrated, in several of his early writings, and especially in that most remarkable work, the "Sanitary Report" of 1842," that excessive sickness, with premature disability and mortality in a population, did not (except, of course, in very extreme cases) tend in general to diminish the aggregate number, but only the average efficiency, of the living, and the average productiveness of their labour. He showed, with the aid of the comparatively very imperfect statistics then available, that in the unhealthiest districts of the country, the proportion of persons incapable of maintaining themselves—of children, of invalids, of the aged (for some of the most remarkable instances of individual longevity are to found in them)—was far larger than in the healthy districts. He showed, comparing the healthiest with the average districts, that the cost of excessive sickness and premature disability and death, including the consequent loss of productive labour, involved throughout the kingdom an annual loss of over 14,000,000*l.*, even according to that defective standard—a loss, I may observe, which has gone on uninterruptedly to the present day; for, notwithstanding all our wise sanitary legislation and great expenditure on sanitary works, our annual percentage of excessive mortality throughout the kingdom resulting from preventible disease has hardly been appreciably diminished, so largely has population increased during that time in places and under circumstances where no commensurate sanitary precautions had been adopted. Indeed, London has not had its rate of mortality diminished under the costly mismanagement of the Metropolitan Board of Works.

Mr. Chadwick, followed and aided by an ever-increasing proportion of economists, has thus more than modified—he has to a great extent reversed—the practical conclusions to be drawn on the report of excessive sickness and mortality, and has demonstrated the concurrence of the demands of economical prudence with those of Christian duty on this important subject. But further, he contended that in an energetic and skilful population, freely allowed to obtain what they could get more advantageously from other countries for what they could produce more cheaply at home, the tendency of the demand for labour would be absolutely to outstrip the ordinary growth of population. He predicted years before it occurred, that very scarcity of labourers in England, compared with the demand for them, which made itself so much felt a few years ago in every branch of industry (except perhaps the work of clerks among men, and governesses among women), and which, though less pressing quite latterly, owing to the recent almost

universal depression of trade throughout the world, still presents a marked contrast to earlier times, and keeps wages at a point, if slightly lowered of late in some branches, yet in all immensely higher than the old standard.

Dr. Farr, in his truly philosophical supplement to the Thirty-Fifth Report of the Registrar-General in 1875, shows that as the death-rate rises so does the birth-rate, that the christenings for London from 1651 to 1660 were 64,000, while from 1661 to 1670 (including the great plague) they were 106,000 in round numbers. He shows that within certain limits this continues. But when these are passed and the death-rate becomes excessive, as 32·5 per thousand in Manchester, and 38·6 in Liverpool, then the birth-rate recedes to 37·3 per thousand in Manchester, and 37·6 in Liverpool, so that but for immigration Liverpool would gradually be depopulated.

It is curious that while the average number of living children in France, is under 3, and in some communes even under $2\frac{1}{4}$, per family, it was $4\frac{1}{2}$ in her two German provinces, Alsace and Lorraine. That distinguished economical writer, the late M. Wolowski, mentioned to Mr. Chadwick the superior efficiency and value of Alsatian labour as compared with French labour generally. It would almost seem as if a large family, requiring acquisition of means to supply the increased demands consequent upon it, acted as a stimulus to increased exertion; while a small family, requiring only conservation to supply an unaltered demand, permitted more stagnation. The larger families seem to have been chiefly found among those who worked for wages, the smaller ones among the small landowners—the latter being less adventurous and energetic, but decidedly the more self-denying and saving. The consequence of this state of things in France is certainly remarkable. The population has remained for some time nearly stationary. Indeed, particularly in years of war, as in 1854-55, it has actually declined a little, while it decreased in the two years 1870-71 together about half-a-million, independently of the loss of Alsace and Lorraine. Still, since the commencement of the century, it has decidedly increased, though more and more slowly. The number of births per marriage, which at that time was 3·19, had gradually fallen to 2·66 in 1868. Dr. Cros, in a paper in the "Hygiène Publique," on the Depopulation of France, remarks that even the actual small surplus of births over deaths is entirely owing to the illegitimate births, as by the age of twenty only 1·92 per marriage would be living of those born in wedlock, *i.e.*, less than the number required to replace the two parents. He mentions that eminent statist M. Legoyt, and a number of other French writers, as having from time to time for some years called attention to the diminishing

tendency to increase in the French population; and, while making various suggestions of more than questionable soundness to check what he, unlike Malthus and Mill, describes as the greatest national misfortune, speaks quite despondingly of the relatively retrograde position of France in the world, as compared with the Anglo-Saxon race, increasing at the rate of a million a-year. The pressure of population in France has never been such as to lead to any great amount of emigration, though there was some which prospered fairly in the old Bourbon times. In Algeria, the last conquest of that dynasty, and now the only considerable colonial possession held by France—for it may be doubted whether Cochin China has not too recently been acquired, and whether its occupation is not still too largely military, fairly yet to count as a colony—in Algeria the few colonists have not generally prospered much, or spread far beyond the towns; indeed the majority of them are not French, but Maltese and other foreigners. And whereas in the days of the great Lord Chatham, her colonies in North America, with Canada on one side and Louisiana on the other, were more extensive than ours—whereas, besides having several islands in the West Indies, she balanced us in the East Indies, and in France herself she had more than double the population that we had in the British Isles—in less than a century she had been practically swept out of the East Indies, and had lost most of her islands in the West Indies. Only a few French settlers remained in America, and those all under Anglo-Saxon dominion, those in Louisiana being subjects of the United States, those in Canada of England. For we had conquered Canada and extended our dominion to the Pacific Ocean, though we had by our folly lost the United States; we had taken the Cape from the Dutch, and pushed our settlements far into South Africa; we had increased largely by conquest our possessions in the West Indies; almost the whole of Hindostan had been gradually either incorporated in our dominions, or practically accepted our supremacy; and last, not least, we had colonised the Australian continent and New Zealand, both of which were yearly increasing prodigiously in wealth and population. And yet, notwithstanding the large emigration from the British Isles to the United States as well as to our own colonies, the number of inhabitants in them had been nearly tripled, from about 10 millions in 1760, to more than 29 millions in 1861, though in France they had only increased from nearly 22 millions to rather more than 37 millions during the same interval. Indeed ours have now increased to more than 32 millions, which is only about 4 millions less than those of France since she has lost Alsace and Lorraine.

To show the complete reversal, among political economists in

general, of the once almost universally received doctrine as to subsistence and population, I must quote, abridging it slightly, another passage from the same supplement by Dr. Farr which I cited before :—

> " In the earlier years, though not recorded, the produce in America increased undoubtedly as nearly in geometrical progression as the population counted at each census; and if the early censuses prove that population increases, the recent censuses prove that subsistence increases in geometrical progression. . . . . There is a limit to the increase of both people and produce; but the tendency now is, as men endowed with skill, weapons, tools, and marvellous machines are diffused over the world, to create subsistence faster than population . . . . Malthus lays it down that (1) ' population cannot increase without the means of subsistence ; ' that (2) ' population does invariably increase where there are means of subsistence ; ' and that (3), as stated in his last edition, ' the checks which repress the superior power of population, and keep its effects on a level with the means of subsistence, are all resolvable into moral restraint, vice, and misery.' . . . The theory is as misleading in practice as it is defective in statement, and, as expressed, erroneous in fact. It assumes that the restraint of population is the corner-stone of policy. Had this principle been accepted by the people, the population of the kingdom, instead of amounting to thirty-two millions, would have remained, as it was at the beginning of the century, sixteen millions. England, in the presence of the great continental states, would have been now a second-rate power; her dependencies must have been lost; her colonies have remained unpeopled; her industry crippled for want of hands; her commerce limited for want of ships."

In truth I know of no book on political economy, certainly in English, thoroughly to be relied on as a guide; but, then, my power of reading has been for years so impaired that I find myself more and more left behind in this and other subjects which I used to study. I have always thought that the valuable works of the late Mr. Mill owed more of their influence to his marvellous clearness of conception, and still more of expression, to the delightful simplicity and unaffected grace as well as lucidity of his style, than to the soundness of his views on several points of political economy. I have already mentioned the increasing dissent from his views on the question of over-population. His chapters on Value have been objected to by some eminent economists, his opinions on freehold cottier farmers (among whom he erroneously classes Norwegian peasants owning 30 acres of land and upwards, with eight or ten cows) are protested against by others, and his views about unearned increments by still more. He touched very slightly on the important question to which I, a little while ago, adverted in relation to the means of transit—the question, I mean, of what services or supplies are in their nature monopolies, and on what principles ought such to be dealt with by the State. His early edition before 1844, I remember, gave a decidedly defective answer to the first question; and I have not found, though that may be because it has escaped my observation, any more satisfactory answer to it in the last edition I have seen, that of 1862. If I remember rightly, he,

in the early one, ascribed the character of a monopoly requiring State interference to the extreme costliness of the fixed capital or plant required for providing that particular source of supply for the public; but ignored the other more essential element requisite to the character of a natural and practically inevitable monopoly of that kind, namely, that of the local, as distinguished from the general, value of the particular service or supply rendered.

The largest copper or iron-mine in the world, if it had a million of fixed capital or plant invested in it, would not have, and ought not to be dealt with as having, a monopoly, because the article supplied has a general value in the market of the world. On the other hand, the gas or waterworks of the smallest town or village, with a plant of less than 1,000*l.*, would have, and ought to be treated as having a monopoly, because the whole value of the water and the greater part of that of the gas supplied depends upon its position, and the greater part of the cost of supplying either consists of the interest on the capital invested in the fixed and permanent works. The water, which is to be had for nothing but the trouble of dipping for it in the brook below, derives its whole value from the convenience of its position in the waterpipe, which brings it into the house from the reservoir or forcing-pump. The value of the service of a coach or omnibus depends equally on its localisation; it, like a railway, takes people who want to go from some particular place to some other. But then the cost of its service consists chiefly in circulating or easily transferable capital in the shape of the vehicle, horses, and harness, equally available at a slight expense to render similar service elsewhere; whereas the materials of the reservoirs and the pumping-engines and pipes in the case of waterworks—and, may I not add, its local act, till lately one of the most costly items—would only, if transferable elsewhere at all, be so at an expense very heavy in proportion to the concern.

About these local services and supplies, I know not how to put the argument more tersely than I did in my address in this town in 1845:—

"In cases where, for the supply of a limited demand, the fixed capital invested bears a very large proportion to what is called reproductive or circulating capital, no effectual competition can take place. Unless the exorbitant charges provoke, or the exorbitant profits tempt, some other party to contend with the original one for the occupation of the whole or a part of a field not large enough for two, the monopoly is complete, limited only by the willingness of the public to consume at the rate charged, and by the dread of the establishment of a rival party. As the probability of this latter occurrence varies, so will the prices; they will fall when the danger is imminent, and be slowly raised as it subsides. If another capital is invested, for a time competition is sharp; but before long the two parties find it their interest to coalesce and to charge the public for a supply produced by the application of two fixed capitals where one would have sufficed for the work, as high a price, on the same principle and subject to the same limitations only, as those which affected the returns upon the original capital."

Sir Robert Peel used to speak of the "torpid hand of Govern-
"ment," and deprecated the State or public bodies doing what trading companies could do instead. I well remember, not long after his passing his comparatively free-trade tariff, when we thought he was meditating, though not yet determined on, the Repeal of the Corn Laws, how, speaking one day on some gas or water Bill and therefore not reported by the papers or Hansard, he described what, in his opinion, was a proper remedy for a bad, inadequate, or unduly dear supply—namely, to establish another company to compete with the one complained of. And I well remember how, with most unwonted audacity (for at no time of my life have I but with extreme reluctance, and never, I may add, with any success, attempted a speech in Parliament), I on that occasion jumped up and said that when he had studied the question of Free Trade a little more he would find it was perfectly applicable to foreign corn and sugar to which he refused to apply it, but not without stringent restrictions to water, gas, and railways, to which he was then applying it—that, unlike the former, the latter were all in their nature monopolies, and ought, for the sake of the public, to be very carefully restricted as such.* He ended by applying free trade to foreign corn and provisions, but protesting against

* Memorandum sent me by an eminent economist and statistician :—

"In 1824 a matured plan of a general public system of railway communication was brought before Sir R. Peel by Mr. Thomas Gray, of Exeter. The plan was based, not upon any mere imagination as to mechanical power, but upon tried and ascertained instances of what had been done and was then doing by steam-power in railway transit on iron tramways in mines and collieries; and it proposed the general application of these means, rudimentary it was true, but improvable on more matured trial, as was afterwards abundantly proved. Now any one who had a perception of the primary economical importance of cheap and quick transit to a nation, especially to a manufacturing nation, would have regarded the proposal with lively interest. But he dismissed it with apathy. Gray pressed it then upon the commercial community of Lancashire, by whom it was taken up, with what ultimate results we know; but they took it up solely at first for the transit of their goods, and not for the transit of passengers mainly as Gray proposed, and which proved afterwards its great success.

"After the great demonstrations afforded by subsequent experience of the gain in economical power to a nation of this new means of communication, and of what should have been the new 'King's Highway,' or public means of transit at the lowest cost, the cost of the service instead of a trading profit (in which view it was successfully taken up in Belgium and in other parts of the continent), he still was apathetic, and left it to be pursued by private enterprise—an error recognised as lamentable in its consequences by Robert Stephenson and railway authorities themselves, as well as by leading political economists. The consequences of that economical error are recognised as now burthening the freedom of transit in this kingdom with some six or seven millions of extra cost, with reduced dividends to the capitalists, with reduced speeds, and, from misfitting trains, increased dangers of life in transit, and all the gross evils of disunity of our communications amongst upwards of a hundred Directorates. Bismarck in Germany, and Minghetti and other statesmen in Italy, are now retracing the errors of our example, and resuming those public duties which only economical ignorance abandoned or neglected."

its application to foreign, as distinguished from colonial, sugar, and persisting to the last in his unsound and disastrous encouragement of unrestricted competition in railways. His various successors in the Government have ever since left each proposed line of railway to be unsystematically dealt with in the most costly manner each on its own merits, by successive separate committees of both Houses, not only selected at haphazard, but without being furnished for their guidance with any clear principles laid down by Parliament, not even as to whether the fact of a proposed line being a competing line should be considered a recommendation or an objection. The natural result of such a continued lottery in legislation has been an immense needless increase to the cost of railways in the shape of parliamentary expenses both in proposing and opposing lines—expenses which have unfairly kept down the average dividends to shareholders, and will for all time necessitate the imposition of otherwise needlessly high fares and rates on passengers and goods in this country.

Now the rates on goods traffic especially involve—and this must be my apology for dwelling so long on the subject—a very serious question of national importance, once put in a striking aspect by my enlightened, truly noble, and much-lamented friend, Lord Taunton, who I always thought would have been more adequately appreciated by the public, if even in his time, as compared with Lord Althorp's, the ever-increasing influence of mere oratory, irrespective of political knowledge, statesmanlike foresight, and calm judgment (in a word, of wisdom as distinguished from cleverness), had not already begun to obtain an undue ascendancy in this country. While still Mr. Labouchere, he carefully pointed out to the House of Commons that, after we had wisely abolished the customs duties on all exports whatever, and on all imports of raw material, in order to give our manufacturers fair play in their severe competition with foreign rivals, it was essential to protect them from being burdened with unduly heavy import and export duties in the shape of high rates on goods traffic by railway—taxes none the less onerous because they went into the pockets of railway shareholders instead of into the Treasury in relief of general taxation. In fact the influence of high railway rates on commerce is considerable. In Belgium, the Government owns and works the railways, and, trusting to their indirectly raising the revenue by increasing the national prosperity, does not seek to make them a source of direct profit. The consequence is, I am assured, that an increasing amount of through traffic is being diverted through Belgium and its ports, the natural course of which would have lain through France but for her high goods rates.

The sound view with regard to these questions of local public

service and supply would seem to be that long ago indicated by Mr. Chadwick—namely, that they should be recognised as, in their nature, monopolies, but, as such, considered to be the property of the public to be alienated in part for a time, or retained in their own hands by the State or local authorities as may seem most for the public advantage. That this view is gaining more and more acceptance is evident from the number of municipalities which have already either set up for themselves or have bought from their original proprietors the waterworks and the gasworks of their towns, and are working them for the benefit of the inhabitants. Some have already done this with one or both for many years; many more are taking steps to do so; and the Metropolitan Board of Works, who have long only too well verified, by their mismanagement of much of the business entrusted to them, my predictions during the debates on the Bill for their establishment in 1855, have now for some time been wisely contemplating buying up both the water and the gasworks of the metropolis, and consolidating under one management what now occupies the staffs of a number of companies. The very able report just presented to the House of Commons by the Committee under the efficient chairmanship of Sir Selwin Ibbetson, after taking evidence for two sessions on the subject of the fire brigade of the metropolis, gives, in my opinion, conclusive reasons in favour of its various recommendations—the most material of them being that the Metropolitan Board of Works should purchase all the waterworks within its district, establish a constant supply at high pressure, and place hydrants all over London, putting the duty of extinguishing fires in the hands of the police, with a special superintendent and a special staff to attend particularly to this new branch of police work. Further reflection and inquiry (and I may add, especially, the warning afforded by the working of the Metropolitan Board of Works) have confirmed me in the impression which I expressed in these terms in this town in 1845 :—"On the whole, it seems to me that the necessary works "for similar purposes are best constructed by individuals or com- "panies—for the action of self-interest will induce them to do it "better and more watchfully—with a monopoly granted to them "for a certain time on certain terms; after which the works them- "selves should revert to the town, or become purchasable by the "town for a certain amount; that afterwards they should either be "managed by the corporation, or, better still, be let by public "auction by the corporation to parties, either with certain fixed "conditions attached to them at an annual rent to be decided by "competition, or else be let at a fixed rent to whatever party will "undertake to guarantee the cheapest and best supply to the town. "These systems seem to me to combine to the greatest degree prac-

" ticable the energy and economy observable in undertakings carried " on by interested parties as compared with public bodies, with due " security from the unreasonable charges or ruinous and wasteful " competition of companies or individuals undertaking for profit " works which are too important to the public, and at the same " time too much monopolies in their nature, to be advantageously " entrusted unreservedly and for ever to interested parties."

When these or other public works of some analogous kind (as gas, docks, piers) thus become the property of the municipality, the expenses become a local charge upon the inhabitants—either wholly borne by those who personally use the supplies or accommodation thus afforded, leaving only so much as may be used for purely public purposes, as, *e.g.*, the gas for street lamps, to be paid out of the rates; or else chiefly borne by the public, when the payments for what is used by private individuals are regularly supplemented out of the rates, the rates being the security on which the requisite capital had to be raised.

Memorandum.

In the course of the discussion of one of the papers subsequently read to the section on the question of Population, I took occasion to disavow for Mr. Chadwick, Dr. Farr, and other economists who take our view of the doctrines of Malthus and Mill on this subject, any idea of in any way countenancing improvidence in marriage or in anything else. But as I have issued this Address in a separate form, I think it right to add a few words here in my friends' vindication and my own.

Under the old poor law as it had been for many years administered, children, whether legitimate or illegitimate, gave the parent a generally recognised claim to parochial relief proportioned to their number; and the amount of wages was extensively regulated, not by the action of supply and demand, nor by the amount of work done by the labourer, but simply by the number of his family. Mr. Chadwick drew up for the Commission of Enquiry that remarkable report which laid the foundation of the new Poor Law Act of 1834—an Act of which it is not too much to say that it arrested, nay, reversed, the tide of improvidence and idleness resulting from the old law, which then threatened the general pauperisation of the rural and, to a considerable extent also, of the urban population. In that and all his subsequent writings, Mr. Chadwick has always sternly denounced improvidence, idleness, and waste, and consistently advocated enlightened economy and industry alike in national, local, and individual work. Indeed it is a question whether he will be better known to posterity and is now better known abroad, where (as is shown by his membership of the

Institute of France) he enjoys more consideration than he does in his own country, as the chief author and, practically for years, the chief administrator of the new poor law of 1834, or as the pioneer in the kindred work of sanitary reform. Dr. Farr, coming after him, has always taken the same line. And I, their humble disciple, may venture to say for myself that I have always fearlessly denounced, whether officially while Secretary to the Poor Law Board, or publicly and privately, before and since, all legislation or administration tending by its laxity to facilitate improvidence, idleness, or waste; and, on the other hand, have done my utmost to promote all legislation, and personally to labour in all local administration, and to support all institutions tending to facilitate and encourage health, industry, and thrift among our people. With this object I accepted the office above mentioned, and the laborious and unpaid one of Chairman of the Metropolitan Commission of Sewers; with this object, except while serving in the Poor Law Board, I have constantly acted as a Poor Law Guardian ever since I came to man's estate; with this object I, more than a quarter of a century ago, became President of the Western Provident Association; with this object I recently took shares in, and became one of the original Trustees of, the Penny Bank founded by Mr. G. Bartley.

But the clear and fundamental difference between the old school of Malthus and Mill and the newer and, in my opinion, far sounder one, to which, under the wise leadership of Mr. Chadwick and Dr. Farr, I have long felt it an honour to belong, is that we look to morality, intelligence, industry, and thrift, coupled (where expedient) with emigration, instead of, like Malthus and Mill and their disciples, to the mere restriction of the number of children, as the chief source of national, family, and individual well-being.—F.

On some Doctrines *of* Population. *A* Paper *read in* Section F *of the* British Association, *at* Plymouth, *in August last. By* William Farr, M.D., D.C.L., F.R.S.

The unity of the human family is an accepted scientific truth. And although there are infinite diversities in men—diversities not only in rank but in character; no such equality between man and man as was passionately asserted at the French Revolution; and no single nationality in the same stage of civilisation as the rest; yet there is a unity of plan, of structure, of faculty, passion, sense and intellect in individuals and in nations. Science as well as Burns can say, "A man's a man for a' that," and answer, as Shakespere intended, all the questions of Shylock in the affirmative. A Jew has "eyes, hands, organs, dimensions, senses, affections, passions;" so has every man, however much he may be despised by any of his scornful fellows as Jew, Giaour, Negro, Barbarian, Turk, Infidel.

Every distinctive character of groups has its special importance, but for the moment let us leave out of account even differences of age and sex and deal with the typical human unit, the *homme moyen* of M. Quetelet, the "living soul" of popular statistics, the abstract numbers expressed under the term "population."

What is now the population of the world? Under what laws do nations increase and multiply, decay and perish? The population of the world was estimated by McCulloch in 1841 at 800 millions; others afterwards raised the numbers to 1,000 millions; but the more recent estimate of Behm and Wagner makes the population 1,424 millions.* The population of Europe and of America is known by the censuses to be increasing, and it is probable that there is some, though not a corresponding, increase in Asia and Africa, but the chief difference is due to the recent estimate being based on a better knowledge of Asia and Africa acquired by geographical exploration. There have been censuses of the greater part of European States, and it was announced at the St. Petersburg Congress that the Russian Government proposed to take a census by name of its subjects in 1878. In a few years we may hope that the population of Turkey, now the only unstatistical State in Europe, will be enumerated.

What degree of reliance is to be placed on the census of China I do not know. Delegates of Japan, when they visited London, took notes of our statistical enumerations and registers.

* See Petermann's Mittheilungen, Supplement to 1876, and "Registrar-"General's Thirty-Eighth Report," p. lxii.

The most remarkable recent statistical operation, and one which does infinite credit to the Government, the Civil Service, and the people, is the census of British India, which was found to contain more subjects than had ever been conjectured.

Until the population is counted, we can accept for certain purposes of reasoning as the population of the earth 1,424 millions, which are still increasing; that is forty-three times the population of the United Kingdom, six times the population of the British empire.

In the last century some thinkers called in question the account of the origin of mankind in the first chapters of Genesis. They contended that it was impossible to admit that the millions of people then living on the earth could have descended from two ancestors, Adam and Eve. Euler showed that by a process of doubling one pair might run up to an inconceivable number in a few thousand years.

The subject has since been prosecuted further by Malthus and others. In the abstract nothing is simpler than the exponential equation by which the number of years in which a population increasing at any rate in geometrical progression, will double itself.

Thus let p be the initial numbers and p' be the ultimate numbers; x the number of duplications of p which will raise it to an equality with p'. Then from the equation $p \times 2^x = p'$, we have by taking the logarithms of the numbers (expressed by λ); $x = \frac{\lambda p' - \lambda p}{\lambda 2}$. When $p = 2$, we have $x = \frac{\lambda p'}{\lambda 2} - 1$. Inserting the numbers, $x = \frac{\lambda(1{,}423{,}917{,}000)}{\lambda 2} - 1 = 29{\cdot}41$. Assuming as the point of origin 5,882 years before 1876, then the period of doubling was two hundred years, as the population by hypothesis doubled itself 29·41 times. Receding 58,820 years from 1876, the period of doubling implied is two thousand years. That is on the hypothesis that the population of the earth sprang from one pair. Starting from fifty pairs, twenty-four duplications (23·763) would produce the present population of the world.

The annual rate of increase is 0·35 per cent. when the population doubles itself in two hundred years; that is faster than the population of France has increased for some years, but not half so fast as the population of the rest of Europe has increased.

There are at present on the earth rather more than *ten persons* to a square kilometer of land on an average, or 10 *hectars** to a person,

* 10 hectars = 25 acres nearly (24·711). The 40 hectars to a family correspond closely with the hyde of land in the Domesday. (See "Census Report, 1851," vol. i, p. lxii.)

about forty to a family.* If the population double itself in the next two hundred years, the population will approach 3,000 millions (2,847,834,000), and there will be 21 persons, say five families, to a square kilometer. The mean population on a square kilometer of the United Kingdom is 106, of Europe 31, of Asia 18, Africa 7, America 2, Australasia and Polynesia 0·5.

Units of land, considered in relation to man and to the means of subsistence, differ more widely than human units; for the land units have only this in common, that they are parts of the solid superficies of the earth. Ice-bound coasts, rocky mountains, sandy deserts, marsh lands, fertile pastures, costly vineyards, and rich arable fields count by the acre or hectar alike, but they differ immeasurably in produce and value. Great economic changes in land are wrought by human skill and labour. The land units and the human units go on improving together and increasing in value; and generally, the more people a land supports the more valuable are its acres, the more advanced are its inhabitants.

It has been laid down that a population can double itself in twenty-five years. That has not been observed. It is true that the population of the United States (during seventy years, 1790 to 1860) was doubled every twenty-three and a third years, but it did not *double itself* at that rate. The increase was largely due to immigration at the reproductive ages.

The landed gentry of ancient lineage have no lack of subsistence, but it would be difficult to show that they increase faster than the general population. The peerage will afford some of our young statists ample materials for inquiry into the increase of the English gentry. Peerages, barring new creations, we know decay in every land, but that is partly due to restrictions on the descent of titles.†

Let us look at actual examples of increase of population. The *natural* increase is due to the excess of births over deaths. Thus in England the census was taken in 1871; the home population was, at the beginning of the year, 22,642,064; the births in the year 797,428; the deaths 514,879; the excess of registered births over deaths 282,549. Now putting p for population, b for births, d for deaths, and $e = b - d$ for increase, we have as the ratio of increase $p : p + b - d :: 1 : 1{\cdot}0125 = r$; as 1 becomes in a year 1·0125, then 100 becomes 101·25. So the rate of increase is said to be 1·25 per cent. per annum: 12·5 per 1,000.

It is usual to determine the birth-rate by dividing the births by

* The area of the British Empire is more than 20 million square kilometers, the population 235 millions; the persons to a square kilometer 12. (See "Census Report for 1871," vol. iv, p. lxxxii.)

† The 154 peers on the Union Roll of Scotland in 1707 were increased by 9, reduced by attainders to 149, of which 32 in all were dormant or extinct in 1873. Parliamentary Return, reprinted in 1877 (No. 148).

the population in the *middle* of the year. So is the death-rate also determined. The rate of increase is slightly less by this method than it is by the other. In the ten years 1861-70 the birth-rate was 0·0351,* the death-rate 0·0224; the difference, 0·0127, was the increase of 1; so making $r = 1{\cdot}0127$ in the equation $r^x = 2$, it will be found that if the rate should remain uniform, as it is not likely to do, the population of England and Wales will be doubled in 54·9 years. At the rate of increase prevalent between 1861 and 1870, the population of Sweden would double itself in 62·2 years, of Prussia in 61·7 years; of Italy (1863-72) in 96·6 years; of France in 257·1 years.

Now it is evident that should annual births and deaths increase by the same numbers simultaneously the rates of increase may remain the same. The annual deaths remaining *stationary*, a decrease or increase of births will imply a decrease or increase of population. The births remaining stationary, a decrease or increase of deaths will imply inversely an increase or decrease of population.

What do we find actually takes place in English districts?† In fifty-six populous districts the annual death-rate was 0·0251; the birth-rate was 0·0381, and consequently the ratio of increase was 1·0130. In fifty-four healthier districts the death-rate was 0·0167; that is, it was 0·0084 lower than it was in the less healthy districts. Now what was the ratio of the natural increase of population in the healthiest districts? It was 1·0134; so it was very nearly the same in the two groups of districts; because the birth-rate (0·0301) was reduced nearly as much as the death-rate in these healthier districts.

The death-rate in the two groups of districts was 0·0251 and 0·0167; the birth-rate 0·0381 and 0·0301.‡ The reduction of the death-rate therefore did not here imply a more rapid increase of population. This was not accidental. For if the districts are arranged in four groups according to the order of mortality, the same law is found to prevail in all. The death and the birth-rates were 0·0251 and 0·0381; 0·0220 and 0·0356; 0·0192 and 0·0322; 0·0167 and 0·0301. The four values of r on which the length of the periods of doubling the population depend were nearly the same; they were 1·0130, 1·0136, 1·0130, 1·0134.§

Thus within certain limits the reduction of the mortality had no absolute tendency to accelerate the natural increase of popula-

* The rates thus stated are most convenient for analytical purposes; multiply by 1,000 and the rates per 1,000 are obtained.

† Supplement to "Registrar-General's Thirty-Fifth Report," p. xiii.

‡ The death-rate per 1,000 in the two cases was 25·1 and 16·7, or lower by 8·4 per 1,000 in the healthy districts.

§ The excess of the birth-rate has not the effect of raising the general death-rate, but the contrary.

tion. When the death-rate reaches a much higher pitch, the birth-rate no longer keeps pace with it; the ratio of increase of population falls, and in unhealthy cities the death-rate exceeds the birth-rate, so the population, instead of increasing, decreases. Hence at this stage of the investigation we are justified in drawing the inference: *the diminution of the mortality of England by sanitary improvement is in no danger of multiplying men beyond the means of subsistence.*

Experience proves the contrary; the birth-rate and the death-rate by the providence of the people rise and fall together.

It is evident on reflection that there is no necessary relation between the birth-rate and the death-rate. The rates may vary independently; thus the death-rate, closely associated with the sickness-rate, may be raised by pestilence, war, or famine; or it may be reduced inconceivably by hygienic and medical agencies.

Except in the case of suicide, death is not a voluntary act. It is different with marriage and its results. They are under the direct control of the will. Thus in England the mothers of the greater number of children born are of the ages 20—40; and in 1871 the wives enumerated between the ages 20—40 were 2,080,991; while the number of spinsters and widows of the same ages was 1,423,360. They were not married; neither was a corresponding number of bachelors and widowers. Striking 414,801 as ineligible off the unmarried women, and deducting 89,550 as a correction for women bearing illegitimate children, there remain 3,000,000, who at the rate of fertility observed among wives, would have given birth to 1,076,100 children instead of 750,010, the numbers actually registered annually. These numbers are approximative.

This addition to the child-bearing would raise the birth-rate. It was 0·0351, and would be under the altered condition 0·0503; and had the deaths remained at the same rate as before, the ratio of population-increase would have risen to 1·0279, which if maintained would double the population in twenty-five years. But the birth-rate among English wives of the ages 20—40 is also repressed; it implies only one birth every thirty-three months of the child-bearing age; but physiologically considered, and after allowing for the sterile, and for the periods of lactation, the interval between each pregnancy might possibly be reduced from 2·8 to 2 years; so if to every two of the 3,000,000 women as above estimated, a child were born annually, the existing birth-rate would be doubled. The death-rate remaining the same, the population would be doubled in fifteen years.

Thus there is evidently a reserve of power sufficient to meet any calls upon England for men to fill up the ranks of new industries, or to replace—though at terrible cost—any losses by war or pestilence.

In the last long great war the population and the wealth of the country increased much faster than in the peace years of the preceding century.

In showing how the birth-rate is increased, it is also shown how by inverse action the birth-rate is diminished. But France affords a striking instance of the voluntary depression of the birth-rate. In the ten years 1861-70 it was 0·0263, whereas the English birth-rate in the same decenniad was 0·0351. Was this difference due to abstinence from marriage in France? By no means. Of 100 women of the ages 20—40, no less than 60·57* are wives in France to 59·39 in England. The women marry first nearly as early in France (age 24·8) as in England (24·3 years); the men marry later. The reduced birth-rate in France is therefore due to the wives having fewer children than in England.

The children in Sweden were born on an average about six years after marriage; and we may fairly, as the population is increasing in England compare the legitimate births in 1873-75 with the marriages in the years 1867-69; that gives 4·5 births to a marriage. But some of the marriages were second marriages of husband, wife, or both. To obtain the average children by the first and second marriages, to every married woman, the births must be compared with the first marriages; and then it is found that on an average married women have 5 (4·992) children in England; whereas married men have 5·260 children, their re-marriages being more frequent, and their second spouses being relatively younger than is the case in the other sex.

The wars as well as accessions and losses of territory have deranged the marriage and birth returns of France for recent years. Comparing the children born annually alive in wedlock in 1861-65, with the annual marriages in 1851-60, we find that there were only 3·24 births to a marriage, and 3·49 births to every woman marrying one or more times.

Thus in England ten married women bear 50, in France 35 children. It is thus evident that the birth-rate is depressed below its standard in England and in France; it varies with the prosperity of the country, with the demand for people; and it can be reduced to as low a figure as the lowest attainable death-rate.

Therefore to keep a population stationary, or to retard national growth, there is no need of the destroying angels, war, pestilence, famine.

Wars fill the pages of history; they are the themes of the great epic poems, and triumphs crown victories. Every man understands a battle, and rejoices at the success of his country's fleets and

* "English Census Report, 1871," vol. iv, p. xix.

armies. It is not for us to gainsay this in Plymouth and in Drake's county. The energies of a nation are never displayed more than in its wars, which generally coincide with its greatest mental and industrial achievements. The ages of the Crusades, of the battle of Crecy, of the defeat of the Armada, of the conquest of Canada, of Trafalgar and of Waterloo, are epochs in English literature, invention, and industry. The very soul that animates the navy and army and that war elicits, is this great principle, that at the call of *duty* every man is expected to lay down his life. I am not therefore decrying the existence of navies and armies; but what I deny is that wars are necessary to check the growth of population. And no officer would for a moment admit that to be the final cause of his art, whose aim is victory and not slaughter. There is no glory in vengeance. Wellington, it is said, shed tears over his lost officers at Waterloo; and Nelson's heart we know was tender. Even an enemy can be mourned, as Byron sings on the Rhine:—

> "Honour to Marceau! o'er whose early tomb
> Tears, big tears, gushed from the rough soldier's lid."
> *Childe Harold*, c. iii, 56.

Pestilence is a war, not between man and man, but between the lowest forms of life and human life. You often see the term zymotic, which I introduced to characterise the class of epidemic, endemic, and contagious diseases. It is from the Greek word ζύμη, leaven, which occurs in the Testament;* and it implies that the direct causes of these diseases (zymads) have this in common with ferments, that they spread, multiply, and effect transformations of organic matter. Thus the transparent lymph in a small pox pustule (variola), contains a multitude of small microscopic bodies† (variolads), which introduced into the body of a single man, multiply into millions, and, under certain conditions, infect a whole city. They grow, multiply, and die, and in these processes prove fatal to thousands of men. Scarlet fever, measles, whooping cough, typhoid fever, cholera, and cattle plague, are due to the like bodies. Each specific zymad produces its zymotic disease and no other. Nor can the species be at present differentiated in any other way than by their effects on the living body. When were they created? We do not know. We know when they were first described, and we know that in the sense of Mr. Darwin they *sport*, they give rise to varieties. The small pox matter is sometimes quiescent. Then varieties of it spring up which spread rapidly. Summer cholera was for centuries common in London. It was described by Sydenham.

* A little leaven leavens the whole lump.

† See Chaveau's Researches, described in "Report on Cholera Epidemic of "1866," Supplement to "Registrar-General's Twenty-Ninth Annual Report," p. lxvii.

Suddenly in Asia a new variety sprang into existence and ravaged Europe. We know under what wretched condition this variety was created; under what conditions typhus that killed judges was generated in gaols; erysipelas, pyæmia, puerperal fever, scurvy, gangrene, dysentery are induced in hospitals, armies and fleets. Some varieties can be raised at will, like putrefaction; erysipelas, and puerperal fever are produced in known conditions.

Upon the other hand, milder can be substituted for malignant varieties, as in the instance of the substitution of vaccinia for variola. Some forms of pestilence have been abolished. The plague that once ravaged London every twenty-four years has been stayed; and on stopping the supply of infected water Asiatic cholera loses its terrors. By hygienic measures which are known, and only await application at the hands of the statesman, the physician, and the engineer, many zymotic diseases can be subdued if not extinguished. In striving after the attainment of this glorious end, you cannot now be terrified by the phantom of population increasing in geometrical progression.

War generates zymotic diseases, which prove more fatal to armies than the sword, and its camp fevers infest the civil population. They raged in the last great European war, and I am almost afraid that the plague may be awakened from its slumber by the war now waging on the Danube and round Kars. Dare we hope here, in this house of the constant friends* of peace and enemies only of slavery, that war will cease: with the echoes of the voices of the wounded and slain in the recent wars of Italy, Austria, Prussia, France, Germany—in the civil wars of Spain, France, and the United States, still ringing in our ears? There are certain grounds of hope. Some of the causes of war have disappeared. Italy and Germany have achieved unity; slavery has been extinguished in America. It is difficult to conceive that any good is to be attained by further wars in Europe. Will any statist contend that the changes of boundaries, such as France and Germany effected when they appropriated Savoy and Alsace, or the absorption of Denmark, Holland, Belgium, Switzerland, are worth the cost of gigantic wars? Would another shuffle of nationalities make the world happier? In our science, as well as in that of our distinguished President, we have *evolutions*. Small tribes in a state of barbarism are always at war. Human sacrifices are a religion: in our own history the Saxons exterminated nearly all the Britons in the east of these islands; the bloodshed in the Danish and the Norman conquests followed. Then came the wars of the feudal castles, the wars of the Roses, the wars of the Commonwealth, and

* The Society of Friends at Plymouth.

finally the Revolution, when civil wars ceased, and had only transient survivals in Scotland and Ireland.

These wars all grew less ferocious. In our own age we have seen duels cease in England. May the British Association not meet at some distant day when in their later *evolutions* duels of Nations have ceased? England has gone latterly in this direction; she has accepted the principle of arbitration under adverse conditions, and instead of encouraging strove to prevent the last and the present cruel wars of France and Germany, Russia and Turkey. Her surgeons and her societies are ever ready to staunch the wounds of soldiers. Should peace reign, populations would no doubt increase, but so would production. Instead of seeing the mothers of the nations working like cattle in the fields on the continent, we should then see millions of men now consuming, creating useful products. If the sword cuts down population the ploughshare creates subsistence. After Sir Francis Drake fought the Spaniard in the Channel, he gave living waters to Plymouth, and some here will drink "to his pious memory," and pass round the "loving "cup."

Famines less than pestilences and wars are required as the ministers of depopulation, and when averted as civilisation advances by making the property of all conditionally the insurance of the lives of all, and by thus enlisting the intelligence of landlords and the humanity of Governments on the side of irrigation, drainage, transport, free trade, education, providence in families, the inhabitants of populous countries undevastated by famines will be more prosperous than their ancestors scattered thinly over ill-cultivated acres. The famines in the Highlands, the famines in Ireland, the famines in India, the frequent famines in England before the introduction of the beneficent Elizabethan law, prove its necessity. The Rent-receiver in India, be he Zemindar or Government, owes something to the land and to the ryot, and that is guidance, roads, canals, drainage, and water. The precocious procreation of feebly-built children is now a dogma of religion in India; but it, as well as polygamy, will lose at least divine sanction when the princes, proprietors, and priests, who lead and create such beliefs, recognise their evil consequences.

It has been shown that the birth-rate can be reduced. Will it be wise in this country to accept that policy, which has been advocated by Malthus, by John Stuart Mill, by Dr. Drysdale; and has been practised by the French peasant? I share our secretary's admiration of John Stuart Mill, and appreciate much that Malthus has written; but against nothing is it more clearly our duty to protest than the errors of authorities in philosophy. And admirable as are the industry and the thrift of the French peasant, I can no

more hold that England is called upon to practise his social philosophy than to revolutionise our agriculture by either cutting up the land into infinitesimal parcels, or ceasing to employ in its culture the several capitals of the landlord in acres, the farmer in stock, the labourer in thews, sinews, and inherited skill.* It is not for us to sit in judgment on other people, who, perhaps, understand their own interests better than distant lookers on. But I know that many eminent French statists regard with apprehension the slow increase of the population of France, and I confess that I should very willingly see some of the wealth the French hoard invested in children to colonise North Africa, once so fertile in men. This policy of sterilisation was put forward as a panacea to lessen the misery of the working classes, and to raise their wages by limiting the supply of labour. Their misery here has been diminished, and wages raised under the opposite policy of increase. Let them then go on as heretofore in keeping up their numbers, and trusting in God; marrying and giving in marriage, as our returns show they do, with prudence in prosperous times, waiting in adverse times, and so slackening the increase of offspring. New and multiplying industries in towns call for men; and the colonies in America, South Africa, and Australia, are at times offering to pay for men and women to inherit and cultivate their fertile acres.

While sustaining and increasing the number of men on the earth is laudable, the policy of perfecting their nature is of still greater importance. No statists can be content with men as they are: not only as they are in the rookeries of Glasgow and Liverpool, but as they are in the wide streets of London, in the clubs or in the crowded drawing-rooms of Society. Health, strength, beauty, grace, wit, goodness, can all be approached nearer than they are by evolution, or as our excellent President prefers it, development. How much races can be improved by training we see in the shows of horticulture and agriculture; and shall see in due time in the assemblies of men; when cities and villages alike enjoy pure air and water; when labourers and artisans live in healthier dwellings; when by improved machinery and by skill they earn higher wages; waste little on alcohol and tobacco; supply themselves and their families with sound food and convenient clothing.

Men living on their daily work will ever be subject to fluctuations of income from fluctuations in health, harvests and trade, which are partially met by insurance. The poor law of England without abuse, is an insurance of life against death by starvation, and of property against communistic agitations. It requires some

* See paper by G. Warde Norman, *Journal of the Statistical Society*, vol. xxxvi, p. 362.

improvements by insuring the family of every man who *contributes to the poor-rate some equivalent advantages* in case of need; and then it will supplement the friendly societies, which at their actual rates of contribution can never provide against all contingencies, and notably against paralysing infirmities and old age. The State alone has the power to deal with criminals and lunatics; by wise reformatories in the first instance, and in confirmed criminals, who breed and educate successive waves of degenerate men, by humane but eternal seclusion.

Where public hygiene stops, private hygiene takes its start. This is what Dr. Parkes in his admirable little work calls the personal care of health. And it must begin at the beginning, with parents and children. The results of wiser selection in marriage will become evident; and so will the diminution of illegitimacy recently observable in England.

Five thousand and sixty-five mothers died of childbirth in the year 1875; and during twenty-nine years *five* mothers died yearly to 1,000 living children born. In 1875 the proportion rose to *six*. I know of no more deplorable deaths; they are often fatal and always prejudicial to the offspring. They can be diminished not by lying-in hospitals, but by the education of midwives, and by such institutions as exist with happy results in London and Birmingham, where skilful midwives with consulting physicians attend women at their own homes. The treatment of the child in the first twelve months either destroys his life, or leaves indelible traces on his future existence. I have written a paper on the mortality of children under five years of age in the principal States of Europe;* and finding that it ranged from 4·09 per cent. in Norway to 11·35 in Italy, procured detailed accounts from several States of the treatment of their babies. It is very different; and, in many instances, very sad. Here they are bound up like little mummies; there they are not nursed by their own mothers, and as they advance in age are fed on improper food. The Obstetrical Society of London was good enough to describe the British baby's career, and to make some excellent practical suggestions. Mothers have much to learn in the management of children, and they will find some excellent instructions in the writings of Mr. Chavasse, and in the tracts of that admirable society, the Ladies' Sanitary Association. The classical works of Dr. Parkes on hygiene, and of other physicians will be safe guides through youth and manhood. All that is wanted is that the doctrines of health should be inculcated in season and out of season; only to be done effectively by the living voice of medical men, and by health officers. I am happy to say

* *Statistical Journal*, vol. xxix, p. 30.

that the Universities of Oxford, Cambridge, and London have instituted examinations on hygiene and vital statistics, which cannot fail to be of inestimable use. The nation must look to the medical profession for still further guidance, which I feel confident they will obtain through the medical council, over which Dr. Acland, who has done so much to promote public health, presides.

It is impossible to survey the present state of the millions of populations of all ages and ranks, without feeling that problems remain for solution, which will task all the resources of the sciences the British Association cultivates. There are rooted prejudices and enormous evils to be combated. And if I have expressed the hope that wars may cease, I trust that the courage to encounter the real enemies of mankind at the cost of life itself will never die out. I do not believe it will. In the sanitary cause, Pringle, Blane, Howard, Shaftesbury, Chadwick, Southwood Smith, Guy, Simon, Rumsey, the Registrar-General, and others have fought and won victories. In the discharge of duty, health officers, surgeons, priests, nurses have died. Lord Herbert died. Some I have known have fallen wounded. Ophthalmia has been one of the scourges of armies, and inflicted on our noble president a cruel privation. Florence Nightingale in the East among perishing British soldiers was herself stricken by fever, which left her in body ill and shut out from the society of her friends; but in spirit with us here, and wherever suffering soldiers and mothers are to be saved. Lord Derby, Sir John Lawrence, Dr. Sutherland, and others, as well as Lord Herbert, co-operated with her in the sanitary commission, which led to the reduction of the annual mortality of the British army in India from 7 to 2 per cent.* Yes, true glory is to be won in this cause. A Roman General† destroyed thousands of Jews in Jerusalem, and an arch commemorates his triumphs amidst the ruins of Rome. In the same age a Man went about healing the sick, pitying the fallen, preaching righteousness, and was crucified; but is now worshipped by millions as the Incarnation of God himself.

* By the "Report of the Royal Commission on the Sanitary State of the Army in India," the mortality in India down to 1856 was at the rate of 6·9 per cent.; by the "Report of the Army Medical Department for 1875," the mortality of the troops in India was 2·3 in the ten years 1865-74.

† Titus.

TABLE A.—*Children Born Alive,* (1) *to every Marriage,* (2) *to every Woman Marrying one or more times, and* (3) *to every Man Marrying one or more times.*

ENGLAND AND WALES.

Annual Marriages in the Three Years 1867-69.			Annual Legitimate Births in the Three Years 1873-75.	Average Number of Children.		
Total Number.	Total Number, less Widows, Remarried.	Total Number, less Widowers, Remarried.		To each Marriage.	To each Woman Marrying one or more Times.	To each Man Marrying one or more Times.
177,695	160,817	152,609	802,755	4·518	4·992	5·260

Note.—The table may be read thus:—To each of the 177,695 marriages, there were 4·518 children born on an average, whereas by the second or third marriage of the women, the proportion was raised to 4·992, and by the second or third marriage of the men, the proportion was raised to 5·260.

TABLE B.—*Number of Annual Marriages and Births in France,* 1841-65.

1	2	3	4	5	6	7	8	9	10
Years.	Annual Marriages of		Years.	Annual Births.			Children Born to each		Difference Resulting from Second, &c. Marriages.
	Women.	Spinsters		Total.	Legitimate.	Illegitimate.	Marriage.	Woman Married Once or Twice.	
1841–50	279,947	260,535	1851–55	939,223	870,793	68,430	3·11	3·34	0·23
'46–55	279,122	258,951	'56–60	967,366	894,669	72,697	3·21	3·45	0·24
'51–60	287,048	265,963	'61–65	1,004,930	928,933	75,997	3·24	3·49	0·25

Note.— The facts in the above table are extracted from the "Statistique de la France " comparée avec les divers Pays de l'Europe," vol. i, par M. Maurice Block, pp. 65 and 70.

The above table may be read thus:—The annual marriages of women in France between 1841-50 were 279,947, of which 260,535 were those of spinsters. The annual births in the five years 1851-55 (which on an average were seven and a-half years after the marriages, as in cols. 2 and 3), were 939,223, of which 870,793 were legitimate, and 68,430 were illegitimate; consequently the births to each marriage were 3·11. Inasmuch as a certain number of the women married twice, each woman married once or oftener had 3·34 children. The proportion of children borne by women in their second and subsequent marriage was 0·23, so of 1,000 children born, 931 were born in the first marriage, and 69 in the second and subsequent marriages.

TABLE C.—*Proportion per Cent. of Births to Total Women Aged* 20—45, *of Legitimate Births to Wives, and of Illegitimate Births to Spinsters and Widows of the same Ages,* 20—45.

	Years.	Births to every 100 Women, Aged 20—45.	Legitimate Births to every 100 Wives, Aged 20—45.	Illegitimate Births to every 100 Spinsters and Widows, Aged 20—45.
England and Wales	1871	19·24	29·33	2·84
France.....	'72	14·55	21·11	2·91

Note.—See also in the "Annales de Demographie International," No. 1, Memoir on the Movements of the Population of Europe and notably of France, by Dr. Bertillon, one of the ablest living demographers. Dr. Bertillon shows that the birth-rate in France decreased from 32·90 in 1801-10 to 26·40 in 1861-70. It fell during the second empire to the lowest point, 26·1, in 1851-60.

Mr. Caird's Address *at* Aberdeen.

The following is the Address delivered on 25th September, by Mr. Caird, C.B., F.R.S., as President of the Economy and Trade Section, at the Social Science Congress at Aberdeen. His subjects are the "Food Supply and Land Question."

Food Supply and Land Question.

Following a series of brilliant papers read here by the various distinguished men who have preceded me, I fear that mine will fall flat. It has one merit—it is short. It deals with two subjects which I have long studied, and which are closely intertwined—the food of the people, and the land question. Seeing that our population is increasing at the rate of 1,000 a-day, and that we appear to have nearly reached the limits of home production, it is a question of pressing importance whence and at what price we are to look for our future supplies, and whether our system of dealing with the land by the separate yet united interests of landlord and tenant, as compared with the peasant proprietorship of France, has or has not conduced to the general welfare and safety of the nation. As President of the Section on Economy and Trade, I will begin with a few sentences setting forth their general principles.

Trade is carried on between the inhabitants of the country and those of the town by exchange of rude for manufactured produce, either directly or by the intervention of money.

The country supplies the town with the means of subsistence and the materials of manufacture.

The town repays this by sending back a part of the manufactured produce to the inhabitants of the country. The inhabitants of the country thus purchase from the town a greater quantity of manufactured goods with the produce of a much smaller quantity of their own labour than they must have employed had they attempted to prepare them themselves. The gains are mutual and reciprocal.

The town, in which there can be no reproduction of substances, may be said to gain its whole wealth and subsistence from the country.

It is this commerce which supplies the inhabitants of the town both with the materials of their work and the means of their subsistence.

The quantity of the finished work which they sell necessarily regulates the quantity of the materials and provisions which they buy.

Neither their employment nor subsistence, therefore, can augment except in proportion to the augmentation of the demand from the country for finished work, and this demand can augment only in proportion to the extension of improvement and cultivation.

Such briefly are the maxims of trade laid down by our illustrious countryman, Adam Smith. They may be regarded in their application to our present position, as if the inhabitants of this country were one great town drawing from all quarters of the world its means of subsistence and the materials of manufacture, and repaying this by the skilful use of all the modes by which art and science have enabled us to manipulate and prepare from the rude substance a better article at less cost than can be got elsewhere. And in the peaceful progress of industry we enjoy one great advantage over all our neighbours, that for two centuries we have been undisturbed either by dynastic or constitutional change, or by foreign invasion, with nothing to distract our attention or withdraw our labour from its most fitting employment, and thus with every advantage given by stability of Government, to elicit skill, and to accumulate capital. When we read the frightful accounts of slaughter and misery and waste which accompany the cruel war now devastating the fairest portion of Europe, we may indeed be thankful that our lot has so long been free from such calamities, but also ready to acknowledge that if our manufacturing skill and widely extended trade exceed that of most other countries, they have had the most favourable opportunity for their development.

The questions to be considered in this department are of great importance. The causes of the general depression of trade, the social effects of trade unions, strikes and lock-outs; and the results of the administration of the Scotch poor-law compared with that of England and Ireland. On each of these subjects I trust some valuable information will be elicited. Three bad harvests in succession, with a largely increased consumption of food since 1871, have doubtless tended to aggravate the depression of trade in this country. We have paid 87 millions sterling more for foreign corn during the past five years and a-half than in the equal preceding period. This is an increase of over 40 per cent. on the money sent abroad for corn which, in so far as with good crops it might have been spent in this country, was a loss to our nearest and best customers, the home producers of food. The prospects of the coming season in this respect are not good. The price of wheat at present is 20*s.* a quarter higher than the average of the last two years, and this on our annual consumption of wheat is equivalent to an addition of 23,000,000*l.* to the cost of our next year's bread. This is partly due to the interruption of imports from the Black Sea, caused by the war in the East, partly to a bad harvest, but partly

also to diminished cultivation at home and abroad arising from the increased cost of production in recent years without a corresponding rise of price. To a certain extent the rise of price is thus legitimate and necessary, though its first effect may appear to add to the general depression of trade. For unless the foreign producers of food, as well as the farmers in our own country, receive adequate remuneration for their expenditure, cultivation and improvement will diminish, and trade and commerce must decline.

Our Supplies of Food.

I propose to ask your attention for a short time to the question of our supplies of food, and afterwards to refer shortly to what is popularly termed the Land Question. Every article of food and clothing is an annual product of the earth, yielded in a large degree in proportion to the ingenuity and industry employed on it by man. Corn, wine, animal food, wool, cotton, silk, sugar, coffee, tea, there is not a single article of food and clothing that is not, directly or indirectly, of vegetable growth. These substances, on which life and health day by day are sustained, cannot, like our mineral wealth, be naturally accumulated and stored away in the bowels of the earth, but are every year a new production, dependent for their abundance in a certain measure on art and industry, but mainly on the sun and rain in due season. Wheat, which forms the great staple of the food of civilised man outside the tropics, occupies, of all cereals, the widest region suited to its cultivation. If the wheat region had been of small extent, the increase of population would have been limited to the food resources of each country. A continued development of mining and manufacturing enterprise in these islands would have been impossible; for bread is indispensable, and we cannot produce it at a low price in sufficient quantity for the wants of our increasing population. Wheat is the common food, which possesses all the elements necessary to sustain life and strength. It is the most generally palatable, and, notwithstanding the vast increase in its consumption, the cheapest article of food we possess. The hard-working poor are far more dependent on it and much larger individual consumers of it than the rich. If its price, like that of most other commodities, had risen with the increasing demand, our trade advantages over other countries would have been counterbalanced, and to a large extent lost. But the wheat region has been designed, apparently, to be co-extensive with the progress of civilised man, and the more regular and extensive the demand upon it, the more ready and continuous becomes the supply, even without the stimulus of an excessive price. The average price of the quarter of wheat for twenty years preceding free trade was 59*s.* 8*d.*, and that of the last twenty years 51*s.* 4*d.*, being a fall of

11 per cent. For the corresponding periods, barley shows a rise of 11 per cent., and oats 9 per cent. But notwithstanding the fall of price, the supply of foreign wheat has risen enormously, and continues to increase. Previous to 1860, the foreign imports of wheat had not exceeded an annual average of 4,500,000 quarters. During the last five years they have reached an annual average of 12,400,000 quarters.

This is a fact of great importance when we consider the increasing population of the country, and the limited means we possess within it of increasing our supply of food. Not only do the consumers increase, but as their circumstances improve they individually use more food. The common estimate of economists thirty years ago, that each person in the community consumed annually 8 bushels of wheat, was a delusion. It was questioned by me in 1850, my estimates then showing that it could not much exceed 5 bushels. Mr. Lawes, to whose elaborate and judicious experiments the agriculturists of this country are so deeply indebted, carefully investigated this subject a few years back, and showed conclusively that, at the time of which I spoke, my figures were the more correct. But he also found that in a period of sixteen years before 1868, the average rate of consumption increased, each person having during the first eight years used 311 lbs. of wheat, and during the last eight 335 lbs., or, in the first period $5\frac{1}{10}$ bushels annually, and in the last $5\frac{3}{10}$ bushels. In the first of those periods, 1852 to 1860, 232 lbs. of this was home-grown wheat, and 79 lbs. foreign. These proportions have during the last five years undergone a great change, and some increase. The home-grown wheat annually consumed by each person is now 158 lbs., and the foreign 183 lbs. But three of these five years have yielded indifferent crops, otherwise the supply of home and foreign would have been nearly equal. These figures show two very important results for the consideration of those who are concerned with the provision of the country. First, that the individual consumption of bread has increased; and, second, that we at present depend wholly on foreign countries for that increase, and for all further addition required by the annual increase of the population. For that addition alone, an annual increase of wheat equal to all the wheat at present grown in Scotland would barely suffice.

The natural tendency of the gradually falling price of wheat in this country since 1848, and the rise in that of barley, oats, and animal food, has been to diminish the breadth of our own wheat. It is now one-fifth less than it was twenty years ago. And the force of that tendency, in spite of the great increase of gold, shows the steadiness of its operation. There has been a yearly increase of consumers, with a larger individual power of consumption of bread,

and at the same time an increase in the volume of gold, the representative of its value, and yet the price has declined.

But though we are already in so great a measure supplied with our bread by the foreigner, we run no greater risk of pressure than other countries on that account, probably less than most. For instead of being dependent on the sometimes fickle climate of our own land, we make all lands our tributaries, exchanging with them the manufactured produce of our mines and looms for the crude produce of their agriculture, on terms mutually advantageous. Either in the east or west there are every year abundant harvests, and we profit by them. Since 1873, the United States and Canada have given us half our supply of foreign wheat. In 1872, with a bad harvest, their export fell one-half; but it made little difference to us, as the abundance of France and Russia filled up the vacuum at no greater cost. In 1871, France, which in 1866 had given us nearly one-third of all we required, could spare us nothing; but the plenty of Russia and the United States made good the difference. During the last two years India has been sending us considerable quantities, which in the present year have mounted up to more than a tenth of our whole supply. The famine in Southern India may for a time interfere with this; but otherwise there is every reason to believe that the numerous cultivators of her fertile plains, having found a satisfactory market, even during a year of low prices here, will continue in still larger measure a trade so auspiciously begun. The foreign corn trade of this country involves the movement of 6,000,000 tons, worth more than 50,000,000*l.* sterling, of immense value to all those countries which find ours the best and most constant market for their produce, but most enriching us into whose lap this wealth of natural abundance is poured. And even if from war some of the main sources of our supply should for a time be cut off, we have the means within our own boundaries of at once meeting such a contingency. We grow at present 800,000 acres less wheat than we did twenty years ago. We have only to revert to the acreage of 1856 to meet such a deficiency as would be caused by all Europe being shut against us. And, beyond that, we possess in our immense breadth of pasture-land a never-failing resource of stored-up agricultural power, which could be at once applied to the production of corn if from any circumstance that course became necessary and profitable.

Next to wheat, in value and quantity, are our imports of Indian corn, nearly three-fourths of which come from the United States and Canada. Last year there was a sudden increase upon all preceding imports of this substance from America, the supply jumping from 600,000 tons to more than 1,300,000. Vast though this quantity appears, it is less than a twentieth part of the

American crop. Previous to the potato famine of 1846-47, Indian corn may be said to have been quite unknown in this country. In 1847 500,000 tons of it were introduced into Ireland to feed the people, but it was not found palatable, and the imports quickly diminished, till, in 1857, they barely exceeded 125,000 tons. It was not much more in 1867, but doubled in 1868-69 after the bad harvest in this country of 1867. It rose still further in 1875, after the bad harvest of that year; and in 1876, with another deficient harvest here, it doubled at once the highest previous importation. It is the cheapest article of food in the market, being at present little more than half the price of wheat per pound, and its introduction in such large quantity greatly modifies the pressure which would otherwise be felt after deficient harvests in this country. It is next to wheat in the extent of zone of production, and therefore capable of great increase should circumstances require it.

The potato crop is becoming more and more precarious. It is costly to grow, expensive in seed and manure, exhaustive of the land, and very liable to disease, and now, possibly to the attacks of the Colorado beetle. The extent planted has declined nearly one-fifth since 1871, while the imports of foreign potatoes in the same time have risen from 43,000 to 300,000 tons. Germany is the great potato country, whence we can always draw, by a moderate increase of price, whatever quantity we require. The annual crop in that country is twice as great, both in quantity and compared with population, as that of either France or the United Kingdom; but it is not exported till the price rises above the rate which it yields when made into spirits.

In these three main necessaries of life—wheat, Indian corn, and potatoes—the field of growth and supply is so extensive, that it has hitherto been found capable of meeting all the demands of a great increase of population without a permanent rise of price. It is very different with meat and other kinds of animal food, the increased consumption of which has led to a great rise of price.

During the last twenty-five years there has been no great increase in the home supply of meat or dairy produce, but the quality of both has much improved. The larger demand for it has been in great part met by foreign supplies. These have within that time increased fourfold in quantity, and 50 per cent. in value, and last year reached the large sum of 35,000,000*l.* sterling. The most portable articles were the first to be moved. Bacon has increased from 3,700 to 160,000 tons. This is a ten-times greater increase than any other kind of meat, and represents many thousand acres of Indian corn, packed in the smallest possible bulk. While the import of bacon and hams has increased more than fortyfold, beef, cattle, and sheep, have in the same time increased fourfold; butter

and cheese sixfold. Nearly one-half of this increase has taken place since 1870. The proportions in which we are supplied at present are with meat three-fourths from home, and one-fourth from abroad; and with dairy produce two-thirds from home (inclusive of milk), and one-third from abroad.

Ten years ago the flocks and herds of this country were as numerous as at present. Their increase by improvement of quality tells little in so short a time on the total produce. During that interval the population has increased by 2,800,000, and the whole of their animal food, in addition to previous supplies from abroad, must, therefore, have been furnished by the foreigner. In ten years more there will be another 3,000,000 to be provided for if no check occurs, so that the question of still larger supplies of animal food is a pressing one. Our own colonies are able to supply three times all we need, and if the means of transport can be satisfactorily established, their capacity of increased production seems likely to outlast our wants and theirs for many generations. America, North and South, has almost boundless sources of supply, which will be developed in proportion to the remunerative character of the demand. The moderate success which has attended the importation of fresh American meat, in ice-cooled chambers, warrants the hope of its continuance and expansion from all regions where ice can be cheaply obtained. And if it can be done successfully from the other side of the Atlantic, there would seem no great difficulty in bringing slaughtered meat in the same manner from the other side of the Channel. The trade is becoming one of such value and importance both to producer and consumer, as also to the intermediate agents engaged in its purchase and sale and transport, that all the aids of science, ingenuity, and enterprise, will be enlisted in its successful extension. It is clear from the very useful and interesting letters in the "Scotsman" from a correspondent who has been carefully investigating the subject in America, that, as the price of the best beef in New York is seldom less than 7*d.* per pound, that quality cannot at present be sold wholesale in this country at a profit much under 8*d.* The fears of our farmers of any serious reduction of price from this cause may therefore be dismissed, but so wide is the area from which it may be obtained, that any excessive rise of price is likely to be counteracted by a rapid increase of supply.

The Land Question.

In considering the question of the home supply of food I naturally revert to that portion of the able address of my friend, Mr. Shaw-Lefevre, who presided over this department last year, in which he discussed the question of the subdivision of landed property, as exhibited by its results in this country and France. In

his main propositions I entirely agree; namely,—in case of intestacy, the desirability of equal partition of land, like personal property; restriction of settlement to lives in being; enlargement of powers of sale to those subject to settlements; simplification of titles, and easy means of registration, by which the transfer of land would be facilitated. But it is very doubtful how far these changes would lead to an increase of small proprietors, as he desires, or diminish that aggregation of land in few hands which he so much deprecates. Each of these alterations in the law would encourage the transfer of land, but to whom would it be transferred? To those who could best afford to pay for it, and who have therefore the amplest means of fully developing its resources. If by equal partition on intestacy some property should become divided into relatively small portions, the temptation of high price is so great, and the immediate return from landowning so small compared with other investments, that members of a family, brought up in equal enjoyment of the whole, would be induced by a high price to part with their several shares rather than submit to loss of position and income. If restriction of settlement and enlargement of powers of sale led to more land being brought into the market, a cheaper system of registration and transfer would increase a competition for it, in which the richest would always possess the greatest advantage. For land in this country has now become an article of luxury which rich men only can long afford to hold. The savings of capital in England are computed at 150,000,000*l.** annually, for which there may be said to be three main investments—first, British land and houses, and railways and other securities; second, Indian and Colonial securities; third, foreign loans. To those who desire safety and social position, and who can dispense with a large immediate return, nothing is so attractive as British land, and, if this country continues to hold its pre-eminence in trade and commerce, no investment for those who can afford to wait is likely in the end to prove more remunerative. But the immediate return is smaller than from any other mode in which capital can be profitably employed. It is no matter of surprise, therefore, that the number of small and generally poor proprietors should diminish, and that many of them should convert their capital as landowners into tenants' capital, by becoming the occupiers of five times more land than they could hold as owners. A class of peasant proprietors in this country would soon become impossible under the temptation of the high prices at which wealthy men are anxious to obtain land.

But it does not follow that, though land in this country may be above the reach of a class of peasant-proprietors, it should be

* I have reason to believe that this is a very moderate estimate.

absorbed by neighbouring magnates. These are not the class who are keen competitors for its possession. It is the successful business men, enterprising and active, who have made their fortunes in the various professions, or manufacturing or mining industry of the country, in trade or commerce, or in India or the colonies, who take the place of those who, from some reason, are no longer capable of holding the land with advantage to themselves and others. These wealthy enterprising men carry that spirit into the business of landowning, and inspire their neighbours with a similar desire for land improvement in districts where that is languid. The evil that exists in the present land system is, not that we have great proprietors amongst us—for, as a rule, their estates are the most liberally managed—but it is because of the too common existence of the possession of land by persons so heavily encumbered by settlements and debt that they are incapable of doing justice either to their property or themselves. For the sake of progress in the fuller development of our agricultural resources, it is desirable that the land in such case should pass into other hands. And the advantage of enlisting a large body of competitors for it, when exposed for sale, induces the offering of estates, whenever practicable, in single farms, and thus in some degree tends to its subdivision.

I readily admit that property in land is one element in the stability of our social system, but it seems to be overlooked in considering this point that the tenant occupiers of land are entitled to be reckoned as part owners of agricultural property. The French system of land tenure is by a small number of great landowners and a large number of small owners, who are also cultivators. Between them they comprise 5,550,000 persons employed in the management and cultivation of the soil. In this number the cultivators of the land as well as the owners are included. For comparison the same classes in this country might be taken, and as for France all the smallest landowners are embraced in this number, so here we might take all who hold one acre and upwards, excluding those below one acre as householders only. I shall not, however, so strain the question, but will take the owners of 10 acres and upwards, as the class we should in this country regard as the true owners of agricultural land. To these I add our cultivators—a very important and influential class of capitalists, the tenant farmers, who, in the crops, live stock, acts of husbandry, manures, and implements and machinery, own equal to one-fifth of the whole capital value of the land. Part of the farmer's capital is incorporated with the soil, and it is all as indispensable for the production of crops as the land itself. Like the "plant" of a railway, no profit or produce can arise until the inert soil is set in motion by it. And in reckoning the capital value of the land, and the numbers interested in

it, we should, as with railways, include the owners of both. There are 180,000 landowners of 10 acres and upwards, and 1,160,000 tenant farmers in the United Kingdom, making 1,340,000 altogether, engaged in the ownership and cultivation of the soil, and all interested in the maintenance of the present social system. Our farmers are a better educated, more intelligent, and more enterprising class, and they possess and employ individually as cultivators a larger capital, than the peasant proprietors in France, in their double capacity as owners and cultivators. When the two are united, and reckoned as heads of families, they comprise one-fifth of the total male adult population, very many of whom with their families, though directly interested in land, follow other and more lucrative occupations. The disparity in point of numbers as compared with France, is thus by no means so great as is commonly supposed.

In point of efficiency in the great economical result of converting the soil to profitable use, how stands the comparison? The average produce of an acre of wheat here is equal to that of two acres in France. With five times the extent of land in wheat, they produce little more than twice the quantity. With nearly double the extent of territory, they have no more live stock. On these points only is it possible for me here to institute a comparison; but on this essential question, the production of bread and meat, the superiority of our system is beyond dispute.

Too much stress indeed, seems to be laid on the relative importance of land compared with other property in this country. The value of house property is fully greater than that of all the land in the kingdom, and the annual income from it is 50 per cent. more. Funded property, railways, mines, gains from professions and trades, all of these are, even more than land, elements of stability, for all of them would be more endangered in times of civil commotion, invasion, or revolution. The owner's income from land is little more than a seventh part of the total assessable income of the country. In the past ten years it has increased in a much smaller proportion than that of any other kind of property. And if a large number of our population were by any chance enabled to exchange their present employments, in order to become peasant proprietors, neither their capital nor their industry would be so productive. We concentrate the well-applied labour of one-seventh of our people, directed by skill and economised by capital, on the full development of our agriculture, leaving free for other industries the power, intelligence, and capital of six-sevenths. These by our mines and manufactures, our trade and commerce, have vastly augmented the national wealth, and at a rate infinitely greater than if a large portion of their labour had been unskilfully dissipated in agricultural employment. If, like the French, five-sixths of our population were dependent on

the land, each one providing from his small estate little more than his family consumed, we should, like them, long ere this have been devising schemes for limiting our numbers within our means of feeding them.

For that limitation is the natural consequence of the French system. The population does not increase. A distinguished French economist, M. De Lavergne, last year drew the attention of his countrymen to the risk they are thus bringing upon themselves. Quoting Rousseau, he says, "there is not a worse famine for a State than that of men." In twenty-five departments of France the deaths exceeded the births. He laments the public apathy on the subject, "the French people appearing to accept their fate in the reduction of the population in the same manner as in the augmentation of the budget, two facts which are probably not so foreign to each other as they seem." But no other result is possible, for population increases, when unchecked, in geometrical progression, and therefore in far greater proportion than a limited area of soil can support. The 5,000,000 of peasant proprietors, with $7\frac{1}{2}$ acres each, and with a compulsory law of equal division among the families on the death of the owner, with no other industry, must keep their numbers within the means of subsistence which their land affords. They are frugal, "with a parsimony amounting to avarice," as a late observer describes them; keen for their fancied interests, and therefore supporters of personal government, because, above all, tenacious of fixity and permanence, while the world around them is changing and advancing. And the result is that, instead of that social stability for which they looked, no country in Europe has been the theatre of so many changes.

Our system, on the contrary, draws from the land of our own country such produce as it can most profitably afford, under the best economical plans we can devise. Our increasing population finds other and ready employment either at home or in the colonies, or on the great continent of the West which we have done so much to people. These in due time send us their superfluity of produce in exchange for our manufactures. We are thus no longer confined to the narrow limits of our own soil; but, with the profits of our varied industries, we command what we require from whatever country it can be most cheaply obtained. The beneficent principle of free trade, which it is to be feared an electoral body of peasant proprietors would have been slow to sanction, thus knits together in friendly bonds the different interests of distant nations, and will yet, I trust, enable the question of the poet to be answered:—

> "When shall all men's good,
> Be each man's rule, and universal peace
> Lie like a shaft of light across the sea?"

Births, Deaths, *and* Marriages, *and the* Comparative Progress *of* Population *in some of the* Principal Countries *of* Europe. *By* Frederick Martin, Esq., *Author of the "Statesman's Year "Book."*

[Read before the Statistical Society, 17th April, 1877.]

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It is one of the most singular facts in the history of civilised mankind that, up to a very recent date, no visible efforts whatever were made to ascertain either the number of births and deaths within a given period, or the actual number of persons living at a certain time, within the boundaries of a country, or of a political organisation, a State. Considering the extreme importance of the subject in all its bearings, it is really surprising that neither the highly-cultured Greeks, nor the practical Romans, world law-makers as much as world-conquerors, should have taken any measures to ascertain the number of individuals passing in and out of existence, within defined periods of time, and also to get at some facts respecting the number of persons forming the population of a town, a province, or a country. Perhaps it is less surprising that, after the extinction of Greek and Roman civilisation, and the gradual rise of West European culture, following upon the darkness of the Middle Ages, the new nations of Christianity should not have undertaken the task so long neglected. A misunderstood text of the Bible* barred the road of progress in this direction, as much as it did in the study of astronomy, and the investigation of the planetary laws. And it was a long time after great Galileo came out of prison, muttering "E pur si muove," before any man came forward bold enough to state his conviction that it was not only not sinful, but a duty, to register births and deaths, and to make all possible endeavours correctly "to number" the people.

* First Book of Chronicles, xxi, 1: "And Satan stood up against Israel and "provoked David to number Israel." Also xxvii, 24, "Joab, the son of Zeruiah, "began to number, but he finished not, because there fell wrath for it against "Israel."

The honour of laying the foundation stone for the system of registration and enumeration, now in practice among nearly all the civilised nations of the world, belongs exclusively to Englishmen, and, more especially, to a native of London, Mr. John Graunt, "citizen and haberdasher." It is a real cause of wonder, looking back, with all our present knowledge, upon the remarks and conclusions of this inquiring haberdasher, "born and bred in Birchin "Lane," and who seems never to have travelled out of reach of the sound of Bow Bells, how full they are of wisdom and of truth. With no other materials before him than the extremely defective London "Bills of Mortality," issued weekly by the guild of Parish Clerks, he arrived at results, laid down in his "Natural and Political "Observations," as original as marvellous for their accuracy. "Seven out of every hundred live in England to the age of 70," he reasoned, among others, which was, probably, quite true for the time. The genial haberdasher of Birchin Lane had a worthy follower in Sir William Petty, founder of the noble house of Lansdowne. Although some of his speculations were rather fanciful, and modern statisticians, as well as men of science, would have good ground to quarrel with his calculations about the population of the earth, deduced from "Adam and Eve doubling themselves every "sixty-four years," and, still more with his somewhat profane attempts to find out "the number of the dead who may rise at the "last day"—which, he discovered, could lie in exactly "one-fifth "part of the graves which the surface of Ireland will afford, without "ever putting two bodies into any one grave"—still his conclusions regarding the number of people living at the time were very shrewd, as well as full of truth. They did not a little to draw the attention of learned and influential men to the necessity of establishing some system of registering births and deaths, more reliable than the old parish registers and "Bills of Mortality," from which facts might be obtained pointing to the laws regulating life. However, a long time had yet to elapse before anything practical was done in the matter, and it was not till 1753, eighty years after the death of John Graunt, and sixty-six after that of Sir William Petty, that a Bill was introduced into Parliament for taking a census of the population. It was not till nearly half a century later that the first census actually took place.

If England was the birthplace, in more than one sense, of the science of vital statistics, it has been no less, up to the present time, the seat of its greatest perfection, thanks to the services of a body of exceedingly able men, devoted heart and soul to their work. It is frankly admitted by the leading statisticians of Europe, chief among them the director of that model establishment, the Statistical Bureau of Berlin, Dr. Engel, that there is not a country in Europe

producing reports on vital statistics equal in breadth of view and true philosophical discernment, to those issued from the office of the Registrar-General in England. It is something for the Statistical Society of London to be proud of to have its dwelling in the shadow of that office, within the walls of Somerset House.

The attempt made in this paper to take a comprehensive survey of the great phenomena of life and death, as exhibited in the vital statistics of some of the principal countries of Europe, is based on the returns contained in the last issued "Annual Report of the "Registrar-General," the thirty-seventh in number. In the chapter headed "Vital Statistics of European States," there are tabulated, after returns obtained from the various Governments, the rates of births, deaths, and marriages of eight foreign States, namely, Austria, Denmark, France, Italy, the Netherlands, Prussia, Spain, and Sweden, the "movement" of which—*mouvement de la population* as the French expressively call it—is compared with that of England. It was the original intention of the author of this paper, in preparing it for the Statistical Society, to make additions to the number of these States, so as to get the widest possible survey of European vital statistics; but the purpose only led to the discovery that its execution was at present impossible. An attempt to get returns of births, deaths, and marriages, if only approximately correct, of European Russia, proved a failure; and to enlarge the circle of smaller States seemed either unnecessary, or was beset with similar difficulties. The conclusion come to was that one might as well try to "gild refined gold, to paint the lily," as to attempt to improve the statistics of Somerset House.

The nine States, including England, of which the vital statistics are given in the "Annual Report of the Registrar-General," may be conveniently classed under three groups, in regard to size and political importance, as well as geographical position—the first embracing the three leading West European States, the second three of Southern, and the third three of Northern Europe. Thus the first group comprises England, France, and Prussia; the second group Austria, Italy, and Spain; and the third group Denmark, the Netherlands, and Sweden. The vital statistics of each of these groups of States are shown in the following series of tables, the first group giving the Births, the second the Deaths, and the third the Marriages.

I.—*Births.*

The proportion of births per thousand of the population was as follows in the States of the first group during the twenty-two years from 1853 to 1874:—

Years.	England and Wales.	France.	Prussia.
1853	33·3	25·9	37·1
'54	34·1	25·7	36·3
'55	33·7	25·1	34·5
'56	34·5	26·4	34·7
'57	34·4	26·0	38·6
'58	33·7	26·8	39·4
'59	35·0	28·0	39·8
1860	34·4	26·2	38·6
'61	34·4	26·9	37·5
'62	35·6	26·5	37·0
'63	35·3	26·9	39·3
'64	35·4	26·6	39·4
'65	35·4	26·5	39·1
'66	35·2	26·1	39·2
'67	35·4	26·2	36·9
'68	35·8	25·7	36·8
'69	34·8	25·7	37·7
1870	35·2	25·5	38·1
'71	35·0	22·6	33·8
'72	35·8	26·8	39·7
'73	35·5	26·1	39·7
'74	36·2	26·2	40·1
Annual average .	34·9	26·1	37·8

A mere glance at this table will show two notable facts. The first is that the birth-rate of the population of Prussia was 2·9 per 1,000 higher, on the annual average of the twenty-two years, than that of England and Wales, and 11·7 per 1,000 higher than that of France; and the second is that during the same period the birth-rate both of England and of Prussia increased by no less than 3 per 1,000, while that of France remained nearly the same. It will also be seen that the great war of 1870-71 affected the birth-rate of France considerably less than that of Prussia; but, on the other hand, the subsequent recovery was far higher in Prussia than in France. In summary, the birth-rate of both England and Prussia —two States with a population of Teutonic origin, Protestant in religion—is high and continues rising; while that of France—Latin, and Roman Catholic—is low and remains stationary to a singular degree.

The vital statistics of the States of the second group, Austria, Italy, and Spain, are not as complete as those of the first. For Austria alone the Registrar-General is able to give, in his last "Annual Report," the full period of twenty-two years; while the official returns from Italy only go over twelve years, from 1863 to 1874; and those from Spain give but ten years, beginning with 1861 and stopping at 1870. The following table exhibits the pro-

portion of births per 1,000 of the population during these various periods :—

Years.	Austria.	Italy.	Spain.
1853	40·8	—	—
'54	38·4	—	—
'55	36·9	—	—
'56	39·6	—	—
'57	42·9	—	—
'58	42·2	—	—
'59	43·2	—	—
1860	40·6	—	—
'61	40·0	—	39·3
'62	40·3	—	38·3
'63	39·9	39·1	37·4
'64	40·4	37·8	38·5
'65	39·1	38·3	37·9
'66	44·2	38·7	37·3
'67	34·7	36·5	37·3
'68	39·3	35·3	34·4
'69	40·2	37·0	35·7
1870	40·5	36·7	35·4
'71	39·9	37·0	—
'72	39·9	37·8	—
'73	40·3	36·3	—
'74	40·1	34·9	—
Annual average	39·9	37·1	37·2

All the States of the second group, it will be seen, have a very high birth-rate, the average of Austria surpassing considerably that of Prussia, highest in the first group. Both Italy and Spain surpass England in the proportion of births per 1,000 of the population. At the same time, while the birth-rate of Austria, like that of France, is stationary, that of Italy and of Spain is visibly decreasing, in each case at about the same proportion. In the twelve years from 1863 to 1874 the birth-rate of Italy fell 4·2 per 1,000, and in the ten years from 1861 to 1870 that of Spain 3·9 per 1,000. There is reason to believe that the birth-rate of Spain has continued falling since 1870; but no official returns exist on the subject.

In the States of the third group, Denmark, the Netherlands and Sweden, the proportion of births per 1,000 of the population was as follows in each of the twenty-two years from 1853 to 1874 :—

Years.	Denmark.	Netherlands.	Sweden.
1853	31·9	33·0	31·4
'54	32·9	32·6	33·5
'55	32·1	32·0	31·8
'56	32·6	32·6	31·5
'57	33·2	34·6	32·4
'58	33·4	32·3	34·8
'59	33·8	34·9	35·0
1860	32·7	31·7	34·8
'61	31·8	35·2	32·6
'62	31·0	33·1	33·4
'63	31·1	36·1	33·6
'64	30·3	35·5	33·6
'65	31·4	35·9	32·8
'66	32·2	35·3	33·1
'67	30·5	35·2	30·8
'68	31·2	34·7	27·5
'69	29·5	34·5	28·2
1870	30·5	35·9	28·3
'71	30·2	35·3	30·4
'72	30·3	35·8	30·0
'73	30·7	36·0	30·8
'74	30·8	36·1	30·9
Annual average .	31·6	34·5	31·9

The three States of the third group have, as will be seen from the above table, a comparatively low birth-rate, the annual average of all of them being under that of England and Wales. It is noticeable that the birth-rate of the closely-packed population of the Netherlands, with 185 inhabitants per square mile, is much higher than that of Sweden, which has only 27 inhabitants per square mile.

The following table exhibits the comparative birth-rates per 1,000 of the population, of the whole of the nine States, arranged according to the *height* of the annual averages :—

States.	Average Annual Birth-Rate.	Highest Rate in any Year.	Lowest Rate in any Year.
Austria	*39·9*	44·2	34·7
Prussia	*37·8*	40·1	33·8
Spain	*37·2*	39·3	34·4
Italy	*37·1*	39·1	34·9
England and Wales	*34·9*	36·2	33·3
Netherlands	*34·5*	36·1	31·7
Sweden	*31·9*	35·0	27·5
Denmark	*31·6*	33·8	29·5
France	*26·1*	28·0	22·6

It is scarcely necessary to say that the preceding table does not show the actual position of each of the nine States so far as high

birth-rates denote an increase of population. In Austria, the first on the list, the rate is stationary, with a tendency to decline; while in Prussia, the second State, the rate is steadily and markedly progressive. Thus Prussia in reality holds the first rank. Spain and Italy again show unmistakable features of decline in the birth-rate; while the next following country, England, exhibits a progressive increase even surpassing that of Prussia. As regards the three Northern States, only one of them, the Netherlands, shows progress, the other two, Denmark and Sweden, exhibiting steadily declining rates. Thus the progressive movement is reduced to three countries, with population of kindred race, namely, England, Prussia, and the Netherlands. Contrasted with the figures shown by these States, the birth-rate of France, not only excessively low, but quite stationary, is a most singular phenomenon. The causes of the stagnancy, if not actual decline, of the population of France, are now occupying some of the most eminent men of that country, but their investigation lies not within the province of the statistician.

II.—*Deaths.*

The proportion of deaths per 1,000 of the population was as follows, in the three States of the first group, England, France, and Prussia, during the twenty-two years from 1853 to 1874:—

Years.	England and Wales.	France.	Prussia.
1853	22·9	22·0	29·0
'54	23·5	27·7	27·6
'55	22·6	26·1	30·6
'56	20·5	23·2	26·2
'57	21·8	23·8	28·2
'58	23·1	24·1	27·6
'59	22·4	27·0	25·7
1860	21·2	21·4	23·7
'61	21·6	23·2	25·3
'62	21·4	21·7	24·5
'63	23·0	22·5	26·0
'64	23·7	22·8	26·0
'65	23·2	24·3	27·2
'66	23·4	23·3	34·0
'67	21·7	22·7	25·6
'68	21·9	24·0	27·3
'69	22·3	23·5	25·9
1870	22·9	28·3	25·9
'71	22·6	34·8	28·4
'72	21·3	22·0	29·3
'73	21·1	23·3	28·0
'74	22·3	21·6	25·8
Annual average	22·2	24·2	27·1

It will be seen that the death-rate of England is much less subject to fluctuation than that of either France or Prussia, and that it is likewise considerably lower. At the same time, the death-rates of both France and Prussia show a more pronounced tendency to decrease, especially that of the latter State. A noticeable fact is that while the great war of 1870-71 is very strikingly marked in the French death-rate, which rose from 23·5 in 1869 to 34·8 in 1871, or no less than 11·3 per 1,000, the Prussian death-rate only rose from 25·9 in 1869 to 28·4 in 1871, or not more than 2·5 per 1,000, and was actually lower in 1871 than in 1872. It is evident that the Prussian loss of life is but insufficiently measured by the deaths on the battle field, but that the war had its enduring after-consequences—*Nachwehen*, says an appropriate German word.

The following table gives the death-rate per 1,000 of the population of the three States of the second group, Austria, Italy, and Spain, during the twenty-two years from 1853 to 1874 in the case of Austria, and for twelve and ten years respectively for Italy and Spain:—

Years.	Austria.	Italy.	Spain.
1853	35·0	—	—
'54	37·4	—	—
'55	46·0	—	—
'56	31·9	—	—
'57	29·6	—	—
'58	32·0	—	—
'59	30·7	—	—
1860	29·8	—	—
'61	31·4	—	26·3
'62	30·9	—	26·8
'63	31·1	30·8	28·5
'64	30·2	29·7	30·6
'65	31·0	29·8	32·8
'66	33·3	29·0	28·0
'67	28·1	34·2	29·1
'68	29·3	30·5	32·6
'69	28·9	27·7	32·6
1870	29·2	29·8	30·1
'71	30·0	30·0	—
'72	32·4	30·7	—
'73	38·5	30·0	—
'74	31·3	30·3	—
Annual average	32·2	30·2	29·7

Compared with the death-rate of England, that of these three countries is very high indeed, being 8·0 per 1,000 more in Italy, and 10·0 per 1,000 more in Austria. As regards Austria, a strange feature is the extreme irregularity of the death-rate, which, sink-

ing in one year—and this, too, that following a great war—as low as 28·1, rose in another as high as 46. It ought to be remarked, however, that the whole of the vital statistics of Austria cannot be well compared for various periods, as the political organisation of the State led to repeated changes in the registration returns. Hungary, with its dependencies, was included in the returns from 1853 to 1862, but excluded subsequently; while up to the end of 1863 the returns embraced also the old Italian provinces.

In the three States of the third group, Denmark, the Netherlands, and Sweden, the death-rate per 1,000 of the population was as follows during the twenty-two years from 1853 to 1874 :—

Years.	Denmark.	Netherlands.	Sweden.
1853	24·3	24·5	23·7
'54	18·5	23·9	19·8
'55	20·1	28·1	21·5
'56	18·9	23·4	21·8
'57	21·9	27·3	27·6
'58	23·3	27·8	21·7
'59	20·4	31·2	20·1
1860	20·2	24·7	17·6
'61	18·4	25·2	18·5
'62	18·4	23·7	21·4
'63	18·3	23·2	19·3
'64	23·3	25·1	20·2
'65	23·2	25·8	19·4
'66	20·9	28·7	20·0
'67	20·0	23·6	19·6
'68	19·3	24·8	21·0
'69	19·1	23·0	22·3
1870	19·1	25·7	19·8
'71	19·5	29·4	17·2
'72	18·3	25·7	16·3
'73	18·6	24·0	17·2
'74	19·9	22·6	20·3
Annual average	20·2	25·5	20·3

The death-rate of these northern States is, it will be seen, much lower than that of the southern countries of Europe, and in the case of two, Denmark and Sweden, lower even than that of England. Though there were great variations from year to year, the general tendency in each of the three States during the period was towards a decline. It is stated in the official reports from both Denmark and Sweden, that the years of high death-rates were those of prevailing epidemics.

The comparative death-rates per 1,000 of the population of the whole of the nine States, are exhibited in the following table, in

which the States are ranged in the order of the *lowness* of the annual averages:—

States.	*Average Annual Death-Rate.*	Lowest Rate in any Year.	Highest Rate in any Year.
Denmark	*20·2*	18·3	24·3
Sweden	*20·3*	16·3	27·6
England and Wales	*22·2*	20·5	23·7
France	*24·2*	21·4	34·8
Netherlands	*25·5*	22·6	31·2
Prussia	*27·1*	23·7	34·0
Spain	*29·7*	26·3	32·8
Italy	*30·2*	27·7	34·2
Austria	*32·2*	28·1	46·0

It is a notable fact that the lowest death-rate in all the nine States shows less variations, not only than the highest, but less than the average annual rate. What is equally noticeable is that, notwithstanding wars and epidemics, the differences in the death-rates of all the States are considerably less than those of the birth-rates.

The following table exhibits both the average annual birth-rates and the average annual death-rates per 1,000 of the population of the nine States, with the surplus, if any, of the birth-rate over the death-rate. The States follow in the order of their average annual surplus, shown in the last column, representing the increase of population:—

States.	Average Annual Birth-Rate.	Average Annual Death-Rate.	*Surplus of Birth-Rate over Death-Rate.*
England and Wales	34·9	22·2	*12·7*
Sweden	31·9	20·3	*11·6*
Denmark	31·6	20·2	*11·4*
Prussia	37·8	27·1	*10·7*
Netherlands	34·5	25·5	*9·0*
Austria	39·9	32·2	*7·7*
Spain	37·2	29·7	*7·5*
Italy	37·1	30·2	*6·9*
France	26·1	24·2	*1·9*

It will be needless to dwell on the extreme significancy of the preceding table, the figures of which have an eloquence of their own. They proclaim very distinctly that there are five States, mainly with inhabitants of Teutonic blood, England, Sweden, Denmark, Prussia, and the Netherlands, the population of which is more or less rapidly increasing; that there are three other States, of either mixed or Latin race, the population of which grows at a moderate rate; and, finally, that in one State, France, the progress

of population is almost stagnant, the percentage of deaths differing not greatly from that of births. One is tempted to exclaim, in the famous words of Lamartine: "Malheureuse France—si riche "et si pauvre."

III.—*Marriages.*

Dividing the nine States into groups, the same as in respect of births and deaths, the following shows the proportion of marriages per 1,000 of the population in the three States of the first group, England, France, and Prussia, during the twenty-two years from 1853 to 1874:—

Years.	England and Wales.	France.	Prussia.
1853	17·9	15·5	17·0
'54	17·2	15·1	15·6
'55	16·2	15·8	15·2
'56	16·7	15·8	16·3
'57	16·5	16·3	18·6
'58	16·0	16·9	18·9
'59	17·0	16·4	16·7
1860	17·1	15·8	16·8
'61	16·3	16·3	15·9
'62	16·1	16·2	16·8
'63	16·8	16·0	17·3
'64	17·3	15·9	17·2
'65	17·5	15·8	18·1
'66	17·5	15·8	15·5
'67	16·5	15·7	18·6
'68	16·1	15·7	17·6
'69	15·9	16·4	17·8
1870	16·1	12·0	14·7
'71	16·7	14·4	15·9
'72	17·5	19·5	20·6
'73	17·6	17·7	20·3
'74	17·1	16·5	19·4
Annual average	16·8	16·0	17·3

The great steadiness of the English marriage-rate, compared with that of France and Prussia, is a notable feature of the above table. The fluctuations during the period were more considerable in the latter than in the former country; while, however, the great war affected the marriage-rate of France more than that of Germany, the French rate falling from 16·4 in 1869 to 12·0 in 1870, or 4·4 per 1,000, and the Prussian rate from 17·8 in 1869 to 14·7 in 1870, or only 3·1 per 1,000. It would seem that, on the whole, the tendency towards an increase is most pronounced in Prussia.

The following table shows the proportion of marriages per 1,000 of the population in the three States of the second group: in Austria during the twenty years from 1853 to 1874, in Italy during the twelve years from 1863 to 1874, and in Spain during the ten years from 1861 to 1870:—

Years.	Austria.	Italy.	Spain.
1853	16·8	—	—
'54	15·4	—	—
'55	14·6	—	—
'56	18·8	—	—
'57	17·6	—	—
'58	17·3	—	—
'59	14·8	—	—
1860	17·5	—	—
'61	17·1	—	16·5
'62	18·0	—	16·0
'63	17·3	16·3	15·3
'64	16·7	16·0	15·5
'65	16·0	18·0	15·7
'66	13·5	11·2	15·9
'67	17·8	13·4	14·2
'68	18·5	14·3	13·3
'69	20·7	15·9	16·2
1870	19·4	14·6	12·5
'71	19·0	14·9	—
'72	18·4	15·0	—
'73	18·5	15·8	—
'74	17·9	15·2	—
Annual average.	17·2	15·0	15·1

The very low rate of marriage in Italy and in Spain forms a singular contrast to the high rate of Austria. In both the former States the marriage-rate appears to be on the decrease, it being very marked in Spain, where the figure had fallen from 16·5 per 1,000 of the population in 1862, to 12·5 per 1,000 in 1870, being a decline of not less than 4 per 1,000 in six years.

In the States of the third group, Denmark, the Netherlands, and Sweden, the proportion of marriages per 1,000 of the population was as follows during the twenty-two years from 1853 to 1874:—

Years.	Denmark.	Netherlands.	Sweden.
1853	18·5	15·5	14·4
'54	17·5	14·9	15·4
'55	17·1	14·5	15·0
'56	17·3	15·1	14·9
'57	18·0	15·8	15·5
'58	17·5	15·9	16·2
'59	16·9	16·3	16·6
1860	16·0	16·2	15·6
'61	14·9	16·1	14·5
'62	14·7	15·6	14·1
'63	15·0	16·5	14·5
'64	11·3	16·7	14·0
'65	17·8	16·9	14·1
'66	16·8	16·7	13·4
'67	15·3	16·7	12·2
'68	14·6	15·3	10·9
'69	14·7	15·5	11·3
1870	14·7	15·8	13·1
'71	14·6	15·9	13·0
'72	15·0	16·4	13·9
'73	16·2	17·0	14·6
'74	16·4	16·6	14·5
Annual average.	15·9	16·0	14·1

The same as the two southern States, Italy and Spain, the two northern States, Denmark and Sweden, show a steadily declining marriage-rate. In Sweden, it will be seen, the rate fell in one year, 1868, to 10·9 per 1,000 of the population, being probably the lowest found in recent years in any State of Christendom.

The following table exhibits the comparative proportion of marriages per 1,000 of the population in the whole of the nine States, ranked according to the *height* of the average annual marriage-rates:—

States.	*Average Annual Marriage-Rate.*	Highest Rate in any One Year.	Lowest Rate in any One Year.
Prussia	*17·3*	20·6	14·7
Austria	*17·2*	20·7	13·5
England and Wales	*16·8*	17·9	16·0
France	*16·0*	19·5	12·0
Netherlands	*16·0*	17·0	14·5
Denmark	*15·9*	18·5	11·3
Spain	*15·1*	16·5	12·5
Italy	*15·0*	18·0	11·2
Sweden	*14·1*	16·6	10·9

It will be seen that there are enormous fluctuations in nearly all the States between the highest marriage-rate and the lowest, the

principal exception being England, which points to this country having enjoyed a more uniform prosperity than the rest of the States of Europe comprised in the list.

A survey of the average rates of marriages and of births, and the differences in them per 1,000 of the population, in the whole of the nine States, is given in the subjoined table, in which the countries are ranked according to the figures of the last column, expressing the comparative fecundity of the marriages :—

States.	Average Annual Birth-Rate.	Average Annual Marriage-Rate.	*Difference between the Birth and Marriage-Rates.*
Austria	39·9	17·2	*22·7*
Spain	37·2	15·1	*22·1*
Italy	37·1	15·0	*22·1*
Prussia	37·8	17·3	*20·5*
Netherlands	34·5	16·0	*18·5*
England and Wales	34·9	16·8	*18·1*
Sweden	31·9	14·1	*17·8*
Denmark	31·6	15·9	*15·7*
France	26·1	16·0	*10·1*

It will be seen that while in eight out of the nine States there are two births and above to one marriage per 1,000 of the population, in the ninth, France, there are little more than three births to two marriages. With a proportion of marriages rather above the average of the nine States, France shows a want of fertility in them as striking as it is unique.

IV.—*Summary.*

As far as can be ascertained from the vital statistics of the nine States passed under review, and leaving out of view disturbing elements, such as emigration, the average increase of population is largest in England. While its birth-rate is not so high as that of some other States, its death-rate is among the lowest. It seems probable that at the end of the present century the population of England and Wales will have risen to 32 millions. Next in rank to England, in respect to increase of population, stand Sweden and Denmark, both with a moderate birth-rate, but an exceedingly low death-rate, that of Denmark being the lowest of any of the nine States. The population of Sweden may be expected to rise to not far from five millions and a half by the end of the century, and that of Denmark to two millions and a quarter. Next in order of increase stands Prussia. The leading German State has a very high birth-rate, but likewise a high death-rate, which latter, however, is steadily sdecreaing, while the former is even increasing. Taking these elements into consideration, the population of Prussia may be

expected to have risen to about 30 millions by the end of the century. It is known that the increase of population of the other German States, taking them as a whole, is not as large as that of Prussia; but it may be fairly calculated that the great empire of Central Europe will have about 50 millions in the year 1900. The Netherlands stand fifth in the list of States as to increase, with a birth-rate nearly equal to that of England, but a much higher death-rate, and the population may be calculated to have increased to five millions by the end of the century. These five States, England, Sweden, Denmark, Prussia, and the Netherlands—all, it will be noted, inhabited by Teutonic races—virtually comprise all out of the nine in which there is a tendency to marked increase of population. In three more, Austria, Spain, and Italy, the birth-rate is high, but the death-rate is still higher, with a tendency even to mount upwards, and the growth of population therefore will be comparatively slow. Still Austria and Italy may both be expected to add about a million and a half to their respective populations before the century has run out, and Spain nearly a million. The only country among the nine enumerated—and probably the only State of Europe—showing scarcely any increase of population whatever, is France. As exhibited in the figures of one of the tables, giving the average annual birth-rates and death-rates, these are not very far from equal. The returns for the twenty-two years from 1853 to 1874—a period including some years of disaster, but likewise many years of the highest material prosperity, such as the country scarcely ever before knew—give the average annual birth-rate at 26·1 per 1,000 of the population, while the average annual death-rate was 24·2 per 1,000. Thus the excess of birth-rate over death-rate in France was not more than 1·9 per 1,000, while in England it was 12·7 per 1,000. At the same time, the average annual marriage-rate of France was above that of Italy, Spain, Sweden, and the Netherlands, and very nearly as high as that of England and Wales. What has been said of the wealthy, highly intelligent, and highly prosperous nation in respect to her politics, holds no less true as to her vital statistics—France is the riddle of Europe.

Discussion *on* Mr. Frederick Martin's Paper.

Mr. Lumley, Q.C., wished to ask Mr. Martin whether, in the preparing of the tables, due regard had been paid to the variations that had taken place in the territories of the different countries in Europe during the last twenty-five years. It was by no means clear whether the figures given were with reference to countries as they stood at any particular time, or whether they referred to the present state of those countries. The country of Denmark, for instance, was very different now from what it was in 1853, a considerable portion of it having been transferred to Prussia. Was this portion included in the returns for Prussia and omitted in the returns for Denmark? Italy was now a country constituted of one united district, and was very different from what it was in 1865. Again, as regards the last returns from France, did they include the provinces that had been added to Prussia? He could not help thinking also, that Belgium had not been very well treated by the paper, considering what was its nature and character, and the famous statistical returns that have been supplied by that country. He should like, therefore, to know whether the word "Netherlands" was meant to include only the Kingdom of Holland.

Mr. N. A. Humphreys entered into a minute critical examination of the various tables, and took exception to many of the inferences drawn from the figures by the author. He thought that instead of drawing conclusions from comparisons of results for single years, Mr. Martin should have used averages of groups of years. The paper stated it was "probable that at the end of the present century the population of England and Wales will have risen to 30 millions," but according to his (Mr. Humphreys') calculations he estimated that it would rise to 33 millions. It was also stated that the high death-rate of Prussia was steadily decreasing; unfortunately, however, it was increasing, for if the period of twenty-two years under observation was divided into two periods of eleven years, the last period would show an increased death-rate. He did not undervalue the paper, which dealt with important figures, but it appeared to him that the figures had not been dealt with scientifically, that the paper contained errors and contradictory statements, and that it was well that these matters should be discussed with a view to their being rectified.

Mr. F. L. Cöster (Vice-Consul in London for Sweden and Norway) said he wished to say a few words in explanation of the variations or fluctuations as regards Sweden. It would be seen, on reference to the tables, that the births in Sweden declined considerably during the years 1867-70. When this was first pointed out to him, he attributed the decline entirely to the failure of the harvests; but he looked into the reports of Dr. Berg, the head of

the statistical department of Sweden, and he found that the decrease had recurred periodically, and that Dr. Berg attributed the origin in a great measure to the distress in Sweden during the years from 1806 to 1810. Sweden had then war with Russia, Denmark, and France, typhus fever was brought home by the soldiers and raged in the country, and famine prevailed at the same time. The consequence was that there were comparatively few children born in this period of about five years, and hence in about thirty years afterwards, from 1836 to 1840, there were few people arriving at the marriageable state, and the same recurring period took place from 1866 to 1870. In addition to that there was almost a total failure of the crops of Sweden in 1867-68, the effect of which was immediately shown in the decreased number of marriages. The births declined from 137,000 in 1866 to 115,000 in 1868; and the marriages, which were in 1866 27,797, decreased in 1868 to 22,833. In 1869, they were 23,503, and in 1870, 25,072; this being mainly the effect of the bad harvests. In connection with this it was found from the Swedish statistics, that 45 per cent. of all the marriages in Sweden took place in October, November, and December. The country being entirely agricultural, it was only after the harvest was over that people could get married.

Mr. Cornelius Walford said, that lately he had looked particularly into the statistics of France. He was not one of those who believed that the population of that nation was to die out. He thought that this theory had been rather overstated; he had made a population table for the last one hundred and fifty years, and there were only two periods during those years where the population showed any decrease whatever, and this had been the result, he believed, in both cases of a decrease of territory. An able article had lately appeared in the "Journal of the Statistical Society of Paris," in which there were some facts stated which went to show that the ultimate tendency might be a decline of the population, unless the causes which had been in operation in the past were modified. No doubt it showed in a very marked manner, that the increase of the population was much less there than in some other States. In regard to France, England, and Germany, he would give the general results from that article as to the number of births in relation to each 1,000 married women between the ages of 15 and 50. In France the number of births per 1,000 of married women was 173; in England 268; and in Germany 270 annually. Those facts were quite in conformity with the conclusions arrived at in Mr. Martin's paper. Of course it was always disadvantageous to take the statistics of any one year, but taking the year 1875, which seemed to be a fair average year for France, he found that the total number of births in that country was 950,975, showing a decrease of 2,600 on the preceding year, but an increase of more than 4,000 on the year 1873. In 1875 the deaths amounted to 845,062, being an excess over those of 1874 of 63,000. The marriages were 305,457, or about 2,000 more than the preceding year. The total increase of the population, therefore—subject to some correction for emigration, which did not, as far as he could judge, seem to be made in the

table—was in 1875, 105,913. This did not show a tendency in the population to die out, and he was satisfied in his own mind that there was a misapprehension in regard to that very popular belief. The total number of illegitimate births in 1875 was 66,000, against 884,975 legitimate, being 7·4 per cent. The number of still-born children—which he was sorry to say we had never been wise enough to register in England—was in France in 1875, 43,000, against 43,334 in the preceding year; but what proportion the still-born births bore to the legitimate as against the illegitimate births was not shown. He commended the perusal of the article in question to those who desired to have exact information on the subject; and he ventured to say that if Mr. Martin's paper had no other effect than to draw careful and rational attention to these facts with regard to France, he was confident that the result of that investigation would be, that some of the illusions that had hitherto existed with regard to France and her population ratio would be removed.

Mr. L. L. Cohen said there were two points connected with the subject which had not occupied the attention of the meeting, and he was sorry he had not provided himself with statistics on the subject. It was a remarkable fact that in France there was a greater movement of the population from the country to the towns than there was in this country; this was especially the case since the war of 1870, and he had been told by French statisticians that this was one of the causes why the birth-rate had remained stationary and that the marriage-rate had rather decreased. The change in the habits of the people's lives had been so great, that it arrested the progressive movement of the country to a remarkable extent. This was borne out by what had taken place in the Netherlands; there the converse had taken place to what had occurred in France. The great proportion of the population in Holland some years ago was in the towns, and it had now gone from the towns to the country, because Holland was now to a greater extent agricultural than manufacturing than it formerly was. The result was, that the births had increased and the marriages had rather increased. In considering this question, it should be borne in mind that it had a great deal to do with the vital statistics of the country, whether the people were engaged in different pursuits and whether, comparing one period with another, there had been a considerable movement of the population so as to disturb the ordinary vital statistics. It appeared to him that in considering these statistics, it was an important element to be considered whether this movement from countries to towns or great cities where wealth and luxury were abundant, was attended with a retrogression in the population of the country. He was not aware whether the rate of births in London was higher than that of the country at large, but he was told that it was not so but that the opposite was the case. This was an important element in considering the vital statistics of a country, and he thought that an inquiry in this direction would be advantageous.

Mr. F. Martin said he had taken all the figures from the returns

of the Registrar-General, and no doubt Dr. Farr would help him to explain those figures. The word Netherlands was the official and real name of the kingdom of which Holland was a mere province.

Dr. Farr said that Mr. Martin's paper was remarkable for the number of facts it contained, and was very interesting. Mr. Martin had selected the figures from what he thought a good source, namely, the Reports of the Registrar-General. He (Dr. Farr) must say that a great deal of trouble was taken with these reports, which were compiled from official returns from the different countries in Europe. He was sure that Mr. Humphreys, who had rather severely criticised Mr. Martin's paper, would not deny that the facts as stated by Mr. Martin were correct, although he might dispute the inferences drawn from the facts. Instead of taking an extreme year, Mr. Humphreys said that Mr. Martin should take an average of years. That was desirable, and he was sure that Mr. Martin would be glad to do it. What the paper was chiefly remarkable for, was its exhibiting in a clear light the facts about the population of the great States of Europe, and no one could deny the importance of these facts. Investigating them in a scientific way, there were a great number of things to be taken into account besides mere facts. With regard to marriages, he had observed that in Italy they varied considerably from a great number of causes, marriage being a voluntary act. The mode of recording the marriages there had varied. A marriage law had been passed in Italy converting marriage from an ecclesiastical ceremony into a civil procedure. A great number of the population objected to this change, and became greatly alarmed at it. In 1863 16 per 1,000 of the population married annually; in 1864, 18 per cent. This increase of rate was owing to the law having just passed. Great numbers of the people of Italy in anticipation of the passing of the Act accelerated their marriages, because they did not choose to marry under civil procedure. In the year 1866 the marriages suddenly fell down to 11 per 1,000; in the following years the percentage rose to 13, 14, and 16, and was now about 15, having attained their normal state. It was also curious to observe the influence of the war upon marriages in France and Germany. As to the deaths, Dr. Engel took a great deal of trouble to get a return of the deaths of all the German soldiers in France, and they were inserted in the statistics of Germany. As to the variation of the birth-rate in France, it was now perfectly well known to exist as a fact. The number of children born to a marriage was much fewer than it was last century, as Mr. Walford could testify.

Mr. Walford: Something less, but I cannot say much less. It is owing perhaps to the thrift of the people who do not desire to have more children than they can support.

Dr. Farr said that the average of births in England and Wales was 35 annually per 1,000 of population, and the birth-rate was remarkably steady, and this being low in earlier years was owing to the fact of registration not being compulsory then as it was now, the

births having been, however, most completely registered for the last ten or twenty years. In England the number of births annually per 1,000 was 35, in Sweden 32, in Denmark 32, and in France instead of 35, it was only 16. The population of France was stationary, but he did not think it was declining or would decline. The French people did not seem to care to procreate children so freely as the English or the Germans. They had a certain standard which he would not attempt to explain; but it was a fact that attracted the attention of eminent French as well as of English statists. He was sure that Mr. Martin would feel that his paper was appreciated by the Society. It had set forth in a very happy way some of the most vital statistics of the great States of Europe. Mr. Martin himself would not say that he could not draw other or more important inferences from the facts he had stated than he had already done, and the members of the Society would not fail to draw inferences for themselves when the paper was in their hands.

Mr. Martin, after thanking Dr. Farr for the compliment he had paid him, said that there was a prevailing mistake in believing that the practical operation of the Malthusian theory was the cause of the unprogressive character of the French population. The stationary condition of the population was due, he thought, chiefly to one cause, namely, the great Napoleonic wars. During these wars the flower of the population of France was destroyed in the field. After ravaging the greater part of Europe, Napoleon took with him a million to Russia, and contemporary historians relate that, at that time there were none but old men and children left in many places. It was a great mistake to say that the French did not want children, they were passionately fond of children. The French race had suffered since the time of Napoleon I, the same as the Swedish race suffered after the exhausting wars of Gustavus Adolphus and Charles XII. The chief reason why England stood ahead of all the great countries was because she had no wars. The best men remained at home, and men had children when in the prime of life.

Dr. Farr said that the population of England never increased faster than during the great war.

Mr. Martin: Which cost England more money than men. The loss in men was altogether inconsiderable compared with the losses of France.

Dr. Farr said that the reason was not so much that the French did not marry, but after marriage they did not produce so many children as in Prussia, or Austria, or England. The Registrar-General for Ireland had shown, that there was a very small proportion of bastards in Ireland compared with England. That had been ascribed to the want of registration, but the Registrar-General had shown that it was also partly due to the great emigration of people from Ireland at the marrying age. This did not hold good, however, in France.

Dr. Guy said, that as far as his own observations of France, made many years ago went, there seemed to be a stronger affection between the brother and the sister in that country than there was in nations where there were more brothers and sisters in a family; and when the family was small the affections of the parents seemed to be more concentrated. But he did not think that this state of things materially affected the question why the French on the average had smaller families than the English. He (Dr. Guy) hardly thought that Mr. Martin's explanation could be the true one. After such a lapse of time the effects of war must have passed away; so that if one short series of years before the war could be compared with another like series after the war, the difference in the productiveness could not be attributed to the circumstance of a drain having been made so many years ago on the manhood of France. There was a very interesting question not touched upon by the author, namely, the annual fluctuations of births, marriages, and deaths. Quetelet it was who had called attention to the fact that the annual fluctuations in the number of marriages, in respect of which people consulted and deliberated before they acted, were less than in the case of the number of deaths, which occurred independent of the human will.

Mr. Walford said that Mr. Martin had asked him to call attention to the table at the bottom of p. 602. In the composition of that table the averages of all the other tables were concentrated, and therefore the fluctuations of the different years would only affect the tables generally; and so far it seemed to get over the difficulties expressed by some of the speakers. The feature which Mr. Martin dwelt upon was in the last column of the table, which showed the surplus of the birth-rate as against the death-rate. He (Mr. Walford) was disposed to think on reading the table that the figures were somewhat exaggerated. In regard to the small families in France, he thought the land question had a very important influence. Those who were acquainted with the land system in France, must be struck with the smallness of the holdings, and a prudent parent might consider that if even that small holding was to be cut up amongst his children, it was material that the number of them should not be very large. Other economic considerations might also prevail in the same direction.

Abstract *of a* Report *published by the* Italian Government *on the* International Statistics *of* Savings Banks. *Communicated by* Edward W. Brabrook, F.S.A., F.S.S.

[Read before the Statistical Society, 15th May, 1877.]

The Statistical Department of the Kingdom of Italy has compiled and presented to the recent International Statistical Congress at Buda-Pesth, a volume of International Statistics of Savings Banks, which contains a larger body of information on the growth and development of saving in the several countries of Europe, and in the United States of America, than had ever before been collected. Indeed, with the exception of the interesting details given by my learned friend Mr. Scratchley, in the introduction to his treatise on savings banks, I am not aware of any attempt in England to collect international statistics on this subject. I venture to think, therefore, that a brief statement of the results arrived at by the Italian statistical department may not be without interest to the Statistical Society. So far as I can, I have brought down the figures to the present time, and for all countries, I have translated the francs of the Italian report into pounds sterling by the convenient equation, 25 frs. = 1*l.*, and my figures must therefore be taken as subject to any slight inaccuracy arising therefrom. I have also adopted the excellent plan, usual in your *Journal*, of indicating the three final 000's by a mere comma.

It will be right to commence, as the report does, with particulars relating to savings banks in Italy itself. Of these, 282 existed at the end of 1872, of which 142 are principal banks, and the rest branches. Of the 142, 75 originated in the efforts of private persons, and the rest are associated with institutions of a more or less public nature. With two exceptions, all are managed without profit to the promoters or guarantors. The minimum deposit accepted is usually one franc, the maximum from 1*l.* to 200*l.* In a few cases no maximum limit is fixed, and in one the minimum limit is one penny. Notice before withdrawal is usually required, in Venetia as long as four months for sums exceeding 12*l.* The number of savings banks existing in 1825 was only 11; in 1855, 100. Eleven provinces of Italy do not possess a single savings bank; while 280 communes, with a population of 6 millions, are provided with savings banks, 8,102 communes, with a population of

21 millions, are unprovided. On the average, Italy possesses one savings bank for every 1,051 square kilometres of area, or for every 95,000 of population. 112 banks, having deposits exceeding 15 millions sterling, are established in urban communes, and 170 banks having only a little more than two millions sterling, in rural communes; the urban population of Italy being to the rural as $8\frac{1}{2}$ to $18\frac{1}{2}$ millions. The amount due to depositors in 1825 was 108,000*l.*; in 1850, 1,600,000*l.*; in 1872, 17,860,000*l.*; the number of deposit books in the latter year being 676,237, giving an average of about 26*l.* per depositor, and nearly 14*s.* per head of the population. The funds are invested as follows:—

	£	Per cnt.
On mortgage	3,960,	or 21
In the public debt	1,882,	„ 10
„ obligations of local authorities	2,088,	„ 11
„ shares and bonds of companies	2,196,	„ 12
„ bills of exchange	3,026,	„ 16
„ loans on public funds and commercial securities	2,768,	„ 15
„ current accounts	1,997,	„ 11
On other securities	979,	„ 4
	18,896,	„ 100

The number of new accounts opened in 1872 was 160,795; the deposits of the year were 7,911,000*l.*; the repayments 6,514,000*l.* Of the number of deposit accounts, 16 per cent. are under 1*l.*; 18 per cent. from 1*l.* to 4*l.*; 16 per cent. from 4*l.* to 10*l.*; 15 per cent. from 10*l.* to 20*l.*; 16 per cent. from 20*l.* to 40*l.*; 12 per cent. from 40*l.* to 80*l.*; and the remaining 7 per cent. exceeds that amount. The total expenses of the banks for the year amounted to 188,554*l.*, or very nearly 1 per cent. of the capital. The profits amounted to 144,000*l.* or three-quarters per cent. The average rate of interest allowed to depositors is $4\frac{1}{2}$ per cent. The system of school savings banks has been adopted in sixty-six communes.

Inquiry was made as to the deposits of savings in popular banks and other establishments of credit. A circular addressed to these institutions produced evidence of a remarkable increase in operations of this kind. In 113 of them, the number of accounts had increased between 1869 and 1873 from 7,457 to 40,836, and the amount invested from 96,000*l.* to 1,038,000*l.* The popular bank of Milan commenced the receipt of deposits in September, 1873, and in December, 1874, its deposits amounted to 593,000*l.* It is fair to note, however, that it offered 4 per cent. interest, while the savings bank of Lombardy only grants $3\frac{1}{2}$.

Postal savings banks were established in Italy by a law of 27th May, 1875. Sums over 80*l.* are not to have interest. Up to

the 15th June, 1876, 904 post offices had been opened for deposits, of which 627 had actually commenced business, 44,000 transactions had taken place, and the amount at the credit of depositors was 43,000*l.*

The other countries as to which the Italian Government obtained information were France, Belgium, Holland, Austria and Hungary, Germany, Switzerland, Great Britain, Denmark, Sweden, Norway, Russia, Finland, and the United States of America. The average deposit per head of population in the European States is 24*s.*, the highest being Denmark with nearly 6*l.* per head, and the lowest Alsace-Lorraine with 4*s.* Great Britain stands eighth, with 2*l.* per head. In the United States of America the deposits exceed 13*l.* per head of the population.

On the authority of Alphonse de Candolle, "The Savings Banks " of Switzerland considered in themselves and compared with those " of other countries " (Geneva, 1838), the savings bank of Hamburg, founded in 1778 by a philanthropic society, is credited with being the oldest institution of the kind in Europe. That of Berne was established in 1787; that of Bâle in 1792; that of Geneva (which, it seems, had but a short existence), in 1794; and in 1798 the Friendly Society for the benefit of women and children, at Tottenham, was founded by Miss Priscilla Wakefield.*

According to more recent researches of M. E. Ehrenberger, in his work on Austrian savings banks, it would seem that one was opened at Brunswick so early as 1765, and one at Oldenburg in 1786. M. Ehrenberger and Dr. Lebrecht have supplied also the names of the following savings banks established before the commencement of this century: Loire, 1790; Kiel in Holstein, 1796.

In 1799 the Rev. Joseph Smith, of Wendover, circulated in his parish proposals for the institution of a savings bank similar to the modern penny banks.†

By 1817, savings banks in England had attained sufficient numbers and importance to justify special legislation in their interest, and accordingly the Act 57 Geo. III, cap. 30, was passed. The impetus it gave to the establishment of savings banks was felt in other countries. In 1818, savings banks were founded in Paris, Berlin, and Stuttgard; in 1819, those of Vienna, Bordeaux, &c.; in 1820, those of Laybach, Copenhagen, &c. In 1822 and 1823 the movement extended itself to Italy, and savings banks were established in Venetia and Lombardy.

The history of savings banks is conveniently divided in the report before us into three periods: first, from 1815 to 1848, the earlier savings banks forming a sort of prologue; second, from 1848

* "Scratchley on Savings Banks," p. 4.

† Ibid., pp. 5 and 6.

to 1861, when the English post office savings banks were established; third, from 1861 to the present time.

Year.	Population.	Number of Banks.	Number of Deposit Accounts on 1st January.	Amount of Deposits on 1st January.
France—				£
1835	33,061,	148	79,	1,426,
'47	35,521,	343	728,	15,245,
'60	36,484,	421	1,125,	13,543,
'72	36,102,	521	2,021,	23,544,
Belgium—				
1870	5,087,	10	87,	1,669,
'74	5,336,	10	132,	2,510,
Austria (cis-Lethian Provinces)—				
1870	20,385,	192	923,	28,571,
'74	21,366,	275	1,269,	53,931,
Hungary—				
1870	15,417,	146	—	11,716,
'73		282	—	15,209,
Prussia—				
1835	13,708,	80	99,	818,
'49	16,331,	220	261,	2,484,
'60	18,491,	471	613,	7,569,
'74	24,639,	979	2,059,	49,315,
Kingdom of Saxony—				
1845	1,836,	31	—	764,
'60	2,225,	115	—	2,549,
'71	2,556,	144	517,	6,556,
'72		156	—	11,445,
Thuringia—				
1873	899,	7	33	1,897,

Year.	Population.	Number of Banks.	Number of Deposit Accounts.	Amount of Deposits on 31st December.
Mecklenburg—				£
1825	417,	2	—	11,
'45	516,	21	—	411,
'60	546,	30	—	1,037,
'72	557,	31	91,	1,072,
Hamburg—				
1870	325,	8	60,	971,
'74	370,	8	81,	1,616,
Bremen—				
1830	60,	1	3,	55,
'45	76,	1	11,	216,
'60	96,	3	36,	875,
'73	135,	4	48,	1,404,
Lubeck—				
1830	42,	1	—	48,
'45		1	—	75,
'60	56,	1	—	75,
'73	52,	2	14,	138,
Bavaria—				
1839	4,370,	104	98,	982,
'48	4,520,	170	125,	1,503,
'58	4,689,	223	185,	2,004,
'69	4,824,	260	279,	2,490,
Wurtemburg—				
1819	1,395,	—	—	7,*
'40	1,646,	—	—	186,*
'60	1,720,	—	—	534,*
'74	1,818,	121	—	2,766,
Baden—				
1852	1,357,	44	27,	448,
'63	1,428,	79	81,	1,620,
'74	1,461,	99	141,	4,142,
Alsace and Lorraine—				
1872	1,549,	—	41,	283,
Holland—				
1872	3,579,	240	99,	1,127,
Great Britain and Ireland—				
1817	19,899,	—	—	328,
'45	27,901,	—	1,062,	30,749,
'60	28,921,	638	1,585,	41,258,
'74	32,412,	Private 474	1,463,	41,467,
		Postal 5,068	1,668,	23,157, 64,624,
To which I may add to 5th May, 1877	—	—	—	Private 43,296, Postal 28,642, 71,938,

* Government banks only.

Year.	Population.	Number of Banks.	Number of Deposit Accounts.	Amount of Deposits on 31st December.
				£
Denmark—				
1860	2,605,	—	—	3,221,
'73	1,824,	314	316,	10,062,
Sweden—				
1861	3,917,	156	198,	1,691,
'73	4,297,	271	563,	6,035,
Norway—				
1873	1,750,	262*	220,	5,201,
Switzerland—				
1852	2,392,	163	181,	2,415,
'62	2,539,	235	355,	5,276,
'72	2,669,	312	542,	11,581,
Russia—				
1863	—	—	100,	1,052,
'72	56,408,†	—	71,	735,
Finland—				
1872	1,838,	36	18,	346,
Italy—				
1825	19,726,	11	—	108,
'45	22,936,	74	—	1,544,
'60	25,016,	125	—	13,925,
'75	27,482,	965	—	21,494,
United States (1875)—				
New York	4,382,	158	872,	64,556,
,, Jersey	906,	36	93,	6,575,
California	552,	25	91,	15,414,
New England	3,486,	441	1,223,	64,203,

* The urban savings banks in Norway form only one-fifth of the whole number, but have two-thirds of the deposits.

† Of Governments in which there are savings banks.

With regard to one of the States of New England, that of Massachusetts, the following particulars are obtained from the last report of the commissioners of savings banks. ($5 = 1l.$)

Year.	Population.	Number of Banks.	Number of Deposit Accounts.	Amount of Deposits on 31st December.
				$
1834	—	22	24,	682,
'48	—	41	69,	2,394,
'61	—	93	225,	8,957,
'75	1,651,	180	720,	47,570,

And with regard to Victoria, Australia, the following from our colleague, Mr. Hayter's, "Victorian Year Book:"—

Year.	Population.	Number of Banks.	Number of Deposit Accounts.	Amount of Deposits on 31st December.
				£
1861	541,	10	12,	582,
'74	808,	157	64,	1,617,

Note.—Post office savings banks were established in Victoria in 1865.

Proceeding to consider the special characteristics of the savings banks in the several countries, the report deals first with their relation to the Government. In France, investments are limited to the public debt, and interest at the rate of 4 per cent. is guaranteed, but the savings banks are private institutions. By a presidential decree of 23rd August, 1875, the post offices are allowed to receive deposits on behalf of savings banks.

In our own country, the savings banks, which date from 1799 are private institutions, but are required to deposit their funds with the Government, and interest at $3\frac{1}{4}$ per cent. is guaranteed to them. The post office banks are purely Governmental; and by their means the number of depositors has doubled, and the amount deposited has increased more than 50 per cent. They grant to depositors interest at the rate of $2\frac{1}{2}$ per cent., and the interest made by the Government on their investments is sufficient to pay expenses and provide a surplus. We have also penny banks, but they are wholly private institutions.

In Belgium, a Government savings bank was established in 1865, and the private savings banks are only nine in number, the government bank surpassing all the rest taken together. The National Bank and the post offices act as agencies for it. Besides the ordinary operations of a savings bank, it deals in life annuities, but, as in England, with comparatively little success.

In Austria, a private savings bank was established at Vienna in 1819. Savings banks are regulated by a decree made in 1844, which places them wholly under the supervision of the Government. They are founded on sound principles, prudently managed, and possess public confidence.

In Prussia, the first savings bank was founded by the municipality of Berlin in 1828. In 1838, they were taken under the supervision of the Government. Their formation has been much aided by an association called the "Central Union for the good of "the Industrious Classes." A great variety of investments is per-

mitted. Besides savings banks, there are, of course, the credit banks of Herr Schultz Delitzsch, which perform a similar function.

The principal savings bank in Wurtemburg is a Government institution; the district savings banks are under municipal management.

In Denmark, savings banks are private institutions, but must not be managed for profit, nor invest in foreign securities, and are required to make an annual return to Government.

The *limit of deposits* is an important matter. In France, it is now 40*l.*; among ourselves, 30*l.* a-year or 150*l.* in the whole; in Belgium, 120*l.*; in Holland, 17*l.*; in the German States, the limit varies according to the rules of the banks. We enforce our limit by the severe penalty of forfeiture of the whole amount for any attempt to evade it. In some other countries it is enforced by a forfeiture of the interest only.

The following is a classification of deposits according to amount:—

Number of Deposit Books per 100.	Under 15*l.*	Under 20*l.*	20*l.* and over.	15*l.* to 30*l.*	30*l.* and over.	20*l.* to 40*l.*	40*l.* and over.
Italy	—	65	35	—	—	16	19
France	—	79	21	—	—	15	6
Paris only	—	90	10	—	—	9	1
Alsace-Lorraine	—	82	18	—	—	13	5
Belgium	—	87	13	—	—	5	8
Mecklenburg	—	83	17	—	—	13	4
Finland	—	85	15	—	—	8	7
Great Britain	—	63	37	—	—	16	21
Prussia	64	—	—	17	19	—	—
Kingdom of Saxony	74	—	—	14	12	—	—
Anhalt	70	—	—	21	9	—	—
Lubeck	—	94	6	—	—	—	—

	Amount.	Number.	Amount.	Number.	Amount.	Number.
		Per cnt.		Per cnt.		Per cnt.
Baden	under 17*l.*	70	17*l.* and under 43*l.*	19	over 43*l.*	17
Alsace and Lorraine	20*l.* and under	82	20*l.* „ 40*l.*	13	„ 40*l.*	5
Denmark	under 23*l.*	74	23*l.* „ 43*l.*	15	„ 43*l.*	11
Sweden (excluding Stockholm)	„ 28*l.*	90	28*l.* „ 57*l.*	7	„ 57*l.*	3
Stockholm	„ 28*l.*	87	28*l.* „ 57*l.*	7	„ 57*l.*	6
Russia	„ 16*l.*	84	16*l.* „ 48*l.*	12	„ 48*l.*	4
Finland	„ 20*l.*	85	20*l.* „ 40*l.*	8	„ 40*l.*	7

The methods of investment vary greatly. In the savings banks of France, 79 per cent. of the deposits are invested on government securities, 19 per cent. on mortgage, and 2 per cent. on municipal bonds. In Belgium two-thirds of the deposits are invested upon commercial securities. The most usual investment is in the public

funds. In Austria, however, 60 per cent. is invested on mortgage; in Prussia, 50 per cent.; in Thuringia, 70 per cent.; in Hamburg, 90 per cent.; in Denmark, 50 per cent.; in Switzerland, 70 per cent.

Proceeding to further details, the report gives particulars as to savings banks in France, from which I extract the following:—

The first savings bank was established in Paris in 1818, and since then 521 savings banks in all have been sanctioned. These have 620 branches. The amount due to depositors on 31st December, 1872, was 20,609,000*l.*, in 2,016,000 accounts, distributed as follows:—

	Per cent.
20*l.* and under	79
20*l.* to 32*l.*	10
32*l.* „ 40*l.*	5
Over 40*l.*	6

The number of transactions in the year 1872 was 2,558,000.

The interest allowed by the Government is 4 per cent.; that paid to depositors in Paris $3\frac{1}{4}$; on the average of all the banks $3\frac{2}{3}$ per cent.

The general and municipal councils assist the banks by donations of about 3,000,000*l.* a-year. The bank of Paris alone has 241,000 depositors. The average of deposit accounts to population is 56 per 1,000, which rises in the department of Seine-et-Marne to 161, and sinks in that of Corsica to 5 per 1,000. The average of investments is a little over 5*l.*, which rises in the Basses-Alps to nearly 9*l.*, and sinks in the department of the Seine to under 3*l.*

The average repayment was nearly 10*l.*, rising in the Charente to nearly 12*l.*, and sinking in the Vosges to a little over 6*l.* The deposits in the Paris savings bank amount to 1,418,000*l.* The savings banks were greatly affected by the events of 1870 and 1871, which caused very large withdrawals. Savings bank deposits contributed 2,503,000*l.*, to the loan of 2 milliards. The majority both of deposits and withdrawals take place in January.

The savings bank of Paris has thirty-two branches. Of the depositors in 1874, 63 per cent. were workmen and artisans, 18 per cent. domestic servants, 10 (wrongly stated in the report as 3) per cent. employés, 3 per cent. soldiers and sailors, 2 per cent. belonged to the liberal professions, and 4 per cent. were annuitants. By a legacy of M. Lavocat, the bank has created 1,256 deposits of 2*l.* each for children between 10 and 15 years.

A statement in the "Journal Officiel" for 12th December, 1876, enables me to bring the particulars of savings banks in France to the end of 1874, when there were 529 banks and 694 branches.

The number of deposit accounts had increased to 2,170,000; the new depositors for the year being 263,000, divided as follows:—

	£
82, workmen	646,
38, domestics	345,
12, employés	83,
7, soldiers and sailors	53,
64, other professions	637,
60, children	239,
Add for friendly societies	5,
263,	1,908,

The expenses of the banks were 10*d.* per deposit account, or ½ per cent. on the transactions of the year. The dotation funds were 674,000*l.*, the reserve funds 95,000*l.*

In *Belgium*, the most important savings bank is that founded by the State in 1865. It has twenty-three branch banks, and the thirty-nine agencies of the national bank and the post offices act on its behalf. On 31st December, 1871, its deposits amounted to 880,000*l.*, a sum nearly equal to that of the other savings banks together. On 31st December, 1874, 1,593,000*l.*, or nearly half as much again as the others put together. Its deposit accounts at the latter date were 92,000*l.*; those of the other savings banks, 40,000*l.*

4*l.* and under	64,
4*l.* to 20*l.*	10,
20*l.* „ 40*l.*	4,
40*l.* „ 120*l.*	5,
Over 120*l.*	2,

The deposits in the year 1874 were 882,000*l.*, in 225,000 sums. Of the deposit account—

75	per cent. are under 4*l.*
12	„ from 4*l.* to 20*l.*
5	„ „ 20*l.* „ 40*l.*
6	„ „ 40*l.* „ 120*l.*
2	„ over 120*l.*

When a deposit exceeds 120*l.*, the manager may, after notice, employ the excess in the purchase of stock. Much use is made by the Government of the deposits for public purposes, such as roads, education, &c. The most considerable of the local savings banks is that of Nivelles, of whose deposits, amounting to 159,000*l.*, as much as 155,000*l.* is invested in the public funds. The Government bank allows 3 per cent. interest, with power once in five years to add a proportion of the reserve fund. The bank of Nivelles allowed 4 per cent. up to 31st March, 1869, when the interest was reduced to 3½.

Of the 240 savings banks established in *Holland*, 175 of which were founded by the Society of Public Utility, 216 are still in existence. Their deposits amount to 1,127,000*l.*, in addition to which they have reserves amounting to 173,000*l.* The rate of interest varies from 3 to 4 per cent.

The savings bank of *Luxemburg* was established in 1859. The deposits on 31st December, 1874, amounted to 311,000*l.*

In *Switzerland* are 312 savings banks. The depositors at the end of 1872 were 542,000, on a population of 2,669,000. The amount deposited was 11,581,000*l.* The deposits for the year were 3,505,000*l.*, and the withdrawals 2,665,000*l.* The principal investment is in mortgages, amounting to 7,424,000*l.*

Austria has 275 savings banks. The number of deposit accounts is stated to be 1,269,000, and the amount deposited 53,930,000*l.* The investments of the year, 22,195,000*l.*, and the withdrawals 18,957,000*l.* The usual rate of interest is 5 per cent., though some savings banks allow 4, and some 6. The savings bank of Vienna is the most important, its total capital being 9,375,000*l.*

Hungary has 283 savings banks, and 15,209,000*l.* to the credit of depositors.

[00,000's omitted.]

	First Period, ending 1848.	Second Period, ending 1861.	Last Return.
France	15,2	13,5	23,5
Prussia	2,4	7,5	49,3
Saxony	7	2,5	11,4
Mecklenburg	4	1,0	1,0
Bremen	2	8	1,4
Bavaria	1,5	2,0	2,4
Wurtemburg	1	5	2,7
Great Britain	30,7	41,2	71,9
Italy	1,5	13,9	21,4
Massachusetts	2,3	8,9	47,5
	55,0	91,8	232,5

Discussion *on* Mr. Brabrook's Paper.

Mr. Frederick Hendriks said the Society would, he had no doubt, consider themselves much indebted to Mr. Brabrook for the care and pains he had taken in bringing before them the figures of the Report of the Italian Ministry of Agriculture and Commerce on this interesting subject of savings banks. At the same time there was reason for disappointment at finding that Mr. Brabrook's paper contained no adequate grouping and analysis of the facts. For example, there were no totals given of the savings banks deposits at any period, nor of the number of all the banks and of their depositors for the whole of Europe. All such details should be given in their calculated ratios to each other, and to the total population of every separate country at a given date, as points of primary importance if the question were treated from a comparative and international point of view. In the absence of these, the title of the paper was somewhat of a misnomer; and, instead of being called "International Statistics," it only deserved the name of a collection of savings bank statistics of various countries. Nor could the present attempt be, with justice, termed the first that had been made to collect together such statistics. In addition to the older essays in that direction, by M. de Candolle, of Geneva, and by Baron Gérando, in his work "Sur la Bienfaisance Publique," they had the very recent statistics of savings banks collected by the Belgian Government, and the reports presented to the French Government within the last two or three years by M. de Malarce, who had been commissioned to visit England and Austria to study their savings bank systems. M. de Malarce had quite lately estimated the aggregate amount of the sums at credit of all the depositors in the savings banks of Europe at about 7 milliards of francs, or say 280 million pounds sterling. This, as he (Mr. Hendriks) would presently explain, might be considered as rather an underestimate, if the figures scattered in Mr. Brabrook's paper were collected and added together. Before, however, referring further to this, he would venture to suggest that there must be a mistake in Mr. Brabrook's statement that the amount of savings bank deposits per head of the population was 13*l.* in the United States. The present population of the United States was about 43 millions, so that the total savings bank deposits at 13*l.* per head would give a total of 559 million pounds sterling. This must be immensely over-estimated. At all events the total deposits from customers of 6,598 United States national, State, private, and savings banks, which gave returns as at October last to the American commissioners of internal revenue, amounted *together* only to 402½ million pounds sterling. After all, the statement in the Italian report, as it was presented in Mr. Brabrook's *résumé*, might only be found to mean that in certain States of the American Union the savings banks deposits were 13*l.* per head of the population of those States. If

so, the allegation that 13*l.* per head was the average deposit of the United States people generally, was without any statistical foundation. There was an American gentleman (Mr. Washburne) now present who might probably be able to clear up any doubt on this subject. He (Mr. Hendriks) had himself taken the trouble to add up the figures given by Mr. Brabrook, and, if not mistaken in a somewhat hurried addition of the figures of the total deposits for all the European countries, it seemed to him that the total amount of the deposits for Europe were within a fraction 293 million pounds sterling, the number of savings banks nearly 12,000, the number of depositors 13 millions. In some instances the figures came down only to 1872 or 1873. Allowing, therefore, for an increase since then, he would estimate the total of the deposits of the European savings banks at about 300 million pounds sterling in 1877. This would give an average for each depositor of about 23*l.*, and an average per head of 1*l.* 4*s.* for each person of the population of Europe, 250 millions in number, comprised in these returns. These results were not very encouraging, having regard to the large area over which the operations of savings banks were spread, and considering that in some of the leading countries of Europe such institutions were now more than two generations old. At the same time, as they constituted only one of several forms of saving, there was a difficulty in drawing conclusions from them as showing in any absolute unqualified manner, the comparative thrift of various countries. They were rather more to be relied upon as an interesting branch of banking statistics, showing the extent to which the floating capital of the lower classes of Europe is distributed in a particularly well available and moderately productive form. It was an observable fact, also, that a really remarkable progress in this form of saving had very recently been observed in France. His attention had been called to some statements made within the last few weeks in the "Journal des Debats." It would appear that in the normal period of eighteen years preceding the war with Germany, the French savings banks deposits increased annually by about 26 million francs. Thus, starting from 275 million francs of deposits in 1852 (when the savings banks law was changed), a total of 720 million francs was reached in June, 1870. After the war, the deposits, which had fallen to 515 millions francs in 1872, attained a total of 535 millions in 1873, and of 573 millions in 1874. But, starting from that time, the annual increments have gone on by hundred millions, and bring up the total deposits to 667 million francs in 1875, to 775 million francs in 1876, and to 790 million francs on 28th February, 1877. At the present moment the deposits are said to exceed 800 million francs. M. de Malarce attributes this astonishing increase in the deposits in a very marked degree to the introduction, throughout France, of the penny savings bank system, established long ago in our own country, but which would appear to have found an even more congenial soil for growth amongst our neighbours. More than 4,000 schools in France have established penny banks since 1874. The number of scholars thus already made familiar with the system amounts to 260,000. Not

only are they educated through these banks into practical notions and habits of thrift, but experience has shown that they act by example upon their elder brothers, parents, and friends, so as in turn to stimulate the latter to saving and thus to largely widen the circle of depositors.

Mr. Cornelius Walford said that some years since, in the course of his travels through Europe, he had made an inquiry into the question of savings banks, not so much for themselves as a means of testing the accumulating wealth of the countries; but before referring to foreign countries he wished to say a word on our own. The last part of the paper attributed to Miss (should be Mrs.) Priscilla Wakefield the founding of the first savings bank in 1804; but if his memory did not fail him this was not the first savings bank in England. De Foe in his essay on "Projects," 1697, had suggested the idea. Mr. John Barber Beaumont founded the Westminster Savings Bank in 1806, which was the first actual savings bank in London. The first savings bank in the provinces was probably that at Wendover. In reference to the statistics of foreign countries there was one noticeable omission, and that was Spain; but he did not wonder at the omission, because it was very difficult to get particulars. Some years ago, in travelling through Spain, he had made an inquiry as to the number of savings banks, and found it exceedingly difficult to get any details at all; but as far as he could then see there were then twelve savings banks and one hundred bull rings (laughter). The people of Spain had not been trained to habits of thrift. With regard to France, he found that savings banks were not made use of in anything like the degree which might be expected, having regard to the well-known thrift of the people of that country. Although it was clear that since the war 28,000,000*l.* had been deposited, that was hardly one-fiftieth of the savings of that most economic people, who invested their money in other forms, partly in securities to bearer, the law wisely giving them great facilities in that way. Everybody in France had real or personal property and coupons payable to bearer. Savings banks in Europe were usually regarded more or less as Governmental institutions, and where the Government was not a stable one there was a great difficulty in inducing the industrious classes to put their money into any banks which seemed to have, even in the remotest degree, any dependence on the Government. He thought that was one of the reasons why the banks had not thriven in Spain and France. In Germany, which was not a rich country, there was a very rapid tendency to the development of savings banks, and returns from Germany would, if they could be obtained, show greater results than in any other part of Europe, probably including Great Britain. The policy of the Government in Great Britain with regard to savings banks had been a very remarkable one, and, he thought, a very unwise one. The amount of deposit permitted to any one individual was limited; and the idea had been to put these institutions under Government guarantee, and consequently they yielded a small rate of interest. He was certain this mode of limitation had had the effect of very much lessening

the development of those banks. He thought that the scheme might easily be amended thus:—that those who desired the guarantee of the Government might have it, but then of course the amount on deposit would be limited because the guarantee involved a loss. But let persons so disposed deposit at the same bank other moneys not under that limitation, either as to amount deposited or rate of interest, and then there would be something for the trustees of these banks to do. At present the savings banks in England were managed by very respectable old gentlemen, who received the money, entered it into a book, and simply caused it to be remitted to the Commissioners of the National Debt for investment. He had had an opportunity of seeing the way in which these things were bungled, and he wondered there was so much confidence as there was in regard to savings banks in England. If they were put on a more business-like footing the amount of deposits might be increased tenfold. In the United States he had had a good opportunity also of seeing the working of savings banks, and they were to be seen there in a much greater state of perfection. Referring to Mr. Hendriks' statistics, he thought it was clear from an examination of the paper that the 13*l.* per head attributed to the depositors in America bore relation only to the four States mentioned in the paper. In California it averaged 30*l.* per head. The New England States and the south-western States were the places where the savings banks most prevailed. In every town of note in America the savings bank was one of the prominent institutions, and not only the working classes, but also the middle classes, were investors. The gentlemen who managed these banks were retired bankers, merchants and those skilled in finance, and the money was frequently lent out for the improvement of properties in the district. This certainly sometimes led to loss, but on the whole there was a direct inducement for people to deposit their money, knowing the many opportunities for profitable investment and that the borrowers were frequently those whom they knew something of, and that the money would realise a large high rate of interest. Those were the only savings banks, as far as he knew, that had free action and that were without restriction as to amount of deposit or limitation as to rate of interest; and the wealth that had been accumulated by them, and the local improvements that had been carried out, presented on the whole an example which he should like to see followed in this country.

The Hon. Mr. Washburne, of Boston, said that the American savings banks were perhaps better seen in Massachusetts than in any other of the States of the Union. There was hardly a town in the State of 6,000 or 7,000 inhabitants, in which one was not found. They were chartered by the legislature, and were conducted usually by a board of trustees, consisting of a dozen or twenty members as the case might be. These gentlemen were usually retired capitalists, or men who could give their time gratuitously to work of this kind. They were carried on, especially in the towns and small cities, with great economy. The chief expenses

were the pay of a cashier, and perhaps of a clerk; the trustees, as before stated, received no remuneration for their services. In these institutions the earnings of all classes of people were deposited, although they had been instituted primarily for the special benefit of the poor; so favourably were they regarded the time had come when the wealthy, as well as the poor, sought them as the safest place for investment to such an extent as the law would allow. In Massachusetts he thought that $1,000 was the most that might stand in any one name. Supposing that a father with a family of seven children, wished to deposit in these institutions sums of money on their behalf, he could place say $7,000 in one, and as much more in another, and still in another; and in that way, in the aggregate large sums of money were deposited by the wealthier classes. Looking at the vast amount of money deposited in the United States in savings institutions, and particularly in Massachusetts, he could understand that it would appear to the stranger incredible that those were exclusively the savings of the poor. They were not: they were so to a large extent, but they included the deposits of the wealthier classes also. A question had been raised by Mr. Hendriks, as to whether the amount of 13*l.* per head of the population of the United States was not in excess of what it really was. He held in his hand a copy of the report of Massachusetts for 1875, from which it appeared that the total amount of deposits in that State at the close of the year, was $237,848,963 21 cents, or about 47,000,000*l.* sterling. The amount per head was put down as $144, or near 30*l.* per head of the population. The population of the State when this report was made out, was about 1,651,652. The number of banks in the State was 180; the number of towns, large and small, if he remembered rightly, was about 360 or 370. The amount of interest which the savings banks of Massachusetts had earned would, he thought, average considerably more than 6 per cent. He thought it would be safe to say that in the last two decades it would amount to 6½ per cent. Some of the older institutions in the State had limited the annual dividend to 5 per cent., and this was guaranteed to the depositors, but an extra dividend had been made, once in five years, of additional earnings which, he thought, had brought the average up to even something more than he had stated. There were institutions in the State where a speculative spirit had prevailed, with a desire to show large dividends, and which had led to injudicious investments, with corresponding loss to the banks. But these were exceptional cases. The soundest institutions regarded 6 per cent. as much as really should be counted upon, and he thought that from their experience as business men, they would agree with the trustees of these institutions in this conviction. The population of New England is about 3,500,000, and the population of the State of New York, about 4,500,000, or something like one million more than all the six New England States; but the amount of her deposits only amounted to about the same as those of the six New England States, or 64,000,000*l.* Leaving New England and the middle States and going into the western and southern States, it would be found that

the same attention had not been given to saving institutions. They were, however, on the increase everywhere in the United States. They were, in fact, benevolent organisations to which the poor man might go and deposit his savings, and feel morally sure of realising 6 per cent. interest and the principal whenever his needs might require it. As he had said before, gentlemen of established reputation were generally selected as directors of those undertakings. The investments were made in United States bonds, State bonds, city and county bonds, stock of the leading banks, and mortgages. Comparatively but little loss had been sustained. The amount invested in mortgages was at the rate of 50 per cent. of the real, or actual value of the property. As before said, the cost of working these institutions was very moderate. In a town with a population of 5,000 or 6,000 inhabitants like Plymouth, for instance, the only *employé* required would be the cashier, with a salary of about 400*l.* or 500*l.* a-year, and a clerk at a small expense. The rent of suitable buildings in country towns was small, and the services of the trustees being gratuitous, the expense of conducting such a concern was necessarily very small; and as all the profits go to the depositors, he could not conceive of any institution better adapted, not only to the poor, but to all classes, who wished to lay by something of their accumulations for a rainy day, or the evening of life. The expense of conducting the larger institutions in cities, of course was greater, but economy in management would apply to them all.

The PRESIDENT having expressed the thanks of the meeting to Mr. Brabrook for bringing forward the paper,

Mr. BRABROOK, in reply, said that the courteous criticism of Mr. Hendriks showed how very necessary the few words of explanation were with which he had prefaced the reading of the paper. It was not an original paper. It was simply an abstract of the report supplied by the Italian Government on savings banks. The very word "international," to which Mr. Hendriks took exception, was on the title page of the report. With regard to the statistics of the United States, Mr. Walford had supplied an answer to Mr. Hendriks. The statement that the United States had 13*l.* per head of the population applied to those States with regard to which he had information, and not those with regard to which he had no information. A more general collecting together of the results of the statistics, with a view to show them in a united form, would be delusive, because it would mix together the countries where 3 per cent., 4 per cent., and 6 per cent. interest was given, and it would mix the countries where there were with those where there were no other means for the investment of the spare capital of the working classes. He had already made, however (see Table A), a statement showing that in the first period ending 1848 the aggregate of the countries from which information had been obtained in order to make a comparison was 55 millions; in the second period, ending 1871, 91 millions; and according to the last return the amount was 232 millions.

MISCELLANEA.

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I.—*The Proposed Discontinuance of Section F, Economic Science and Statistics, at the British Association.*

The following communication appeared in the *Economist* of 20th October, with reference to the proposed discontinuance of Section F of the British Association:—

"The new number of the *Statistical Journal* gives very properly the official papers which have arisen out of the proposal as above, and these papers fully confirm the views expressed in the *Economist* 8th September, in favour of retaining Section F as part of the programme of the British Association.

"At a period not very distant, it was my good fortune to be connected pretty closely for several successive years in an official capacity with Section F, and also in an official capacity with the Statistical Society. Towards the end of that period Section F began to be invaded by the miscellaneous and meandering class of papers, which in later years have unhappily become far too frequent in the proceedings of the section: and it then became my duty, in consultation with others, to discover, if possible, a remedy for the evil. In the first place, it was manifest that the mischief arose chiefly from the insufficiency of the controlling power under which the section was conducted. That controlling power was in theory, and according to the rules of the British Association, composed of three parties, viz., the president, the secretaries, and the committee; and, if these authorities could have acted in concert for some time *before* the week of meeting, as well as during that week, nothing better could have been desired. But there was not only no previous concert—there was scarcely any previous nomination of these officers.

"One of the wisest and most successful rules of the Association, is that the president of the whole body shall be publicly nominated a year in advance of the meeting which is to assemble under his care. Hence the president-elect has ample time to consider his plans, to apply to his friends for support, and to arrange that particular subjects shall be brought before the Association by competent persons. But the reverse of this excellent rule is applied to the presidents of sections. These officers are nominated privately by the general committee only a few weeks, sometimes not so long, before the actual date of meeting; and the secretaries and committee are left, to a large extent, to the chances of the first day of the meeting itself.

"It is impossible under such a system that there can be anything but imperfect control; and the imperfection of the control is more felt in Section F than in any of the other sections, and for the obvious reason that the Economic and Statistical Division is most

liable to the sudden and persevering incursion of non-scientific paperists and speakers.

"One of the most marked changes in the condition and functions of the British Association is, that the office of the general president has become less—and the office of the sectional presidents more—important and conspicuous.

"The field of science has happily become so vast, that it is not profitable nor desirable that the general president should attempt in his opening address to do more than discuss the present aspect of the branch of knowledge most familiar to him. The general surveys and exhortations of former days are now impossible and out of place. But the addresses of the presidents of sections become every year of greater value and importance; and the same remark applies to the proceedings of the sections—now almost twice as numerous as they were thirty years ago.

"The suggestion, therefore, I have to urge is that the efficiency of all the sections, but especially of Section F, can be best secured by the public nomination of the sectional presidents; of the local, and, at least one other of the secretaries; and of two or three of the vice-presidents, if not twelve months, certainly not less than six months prior to each meeting. I lay stress on the *public* nomination, in order that the members of the Association as a whole may be informed of the names of the persons under whom the sections are to be placed; and also in order that the reputation and character of these persons may become pledged, as it were, to the success of their several departments.

"Further, as regards the Economic Section, I would suggest that the Statistical Society in London should constitute, from among its members, a standing committee, charged with the duty of assisting and co-operating with the office-bearers-elect of Section F. In this manner it would be possible to settle beforehand a programme of papers, and arrange for the presence at the meeting itself of persons competent to sustain scientific discussion.

"The Council in London of the Social Science Association have from the first exercised over the annual meetings a control very similar to that now suggested, and with the best results. The point in which they have failed, so far, has been their inability to announce publicly the names of the general and sectional presidents and secretaries some months before the meetings.

"There is another most excellent and successful arrangement of the Social Science Association, which has become urgently needful at the meetings of the British Association, viz., the delivery of the addresses of presidents of sections, not all on the Thursday morning, as at present, but on successive mornings of the week of meeting. The delivery of ten or twelve addresses on the same morning is bewildering and awkward; unfair to the speakers, and still more unfair to the members of the Association.

"On the general question of the appropriateness of Economic Science and Statistics as the special subjects of one of the sections of the British Association, I conceive that there is scarcely room for debate at this time of day. If the most illustrious of the founders of the Association, fifty years ago, considered that these subjects were then proper to be included in the scheme of an association for

the advancement, not of natural science only, but of science as a whole, it cannot be seriously contended that they would now desire to exclude them. In point of fact, as concerns statistics, there is now far stronger reason for applying to them exact methods and searching discussion than at any former time. The necessities of Governments, the competition of commerce, and the labours of individual inquirers have amassed statistical materials, which are in a great degree useless, because not yet dealt with on scientific principles of reduction and classification. In this respect statistics closely resembles meteorology, and the remedy required is precisely the same in both cases, viz., controversy and discussion—rival explanations and antagonistic theories—carried on with all the excitement of discovery and contest until the truth be made plain.

"But this is precisely the sort of platform and opportunity which the British Association was set up to secure and render public and permanent; and it is not supposable that after fifty years of noble and advancing faithfulness to its fundamental principles it will now retire pusillanimously from a province of its wide domain, as likely as any of the rest to enlarge the scope and extend the appliances of positive knowledge."

F. R. S.

II.—*Turkish Resources.*

The *Times* of 20th October published the following sequel to the article on Russian Statistics, which we reprinted in the last number of the *Journal*:—

"In a review of Russian statistics published on the 22nd of August, we concluded by saying that considerations of the resources of Turkey, similar to those we had applied in the case of Russia, would perhaps show that Turkey is 'capable of a much greater effort without exhaustion than is commonly supposed.'

"We now propose to inquire a little into the statistics of Turkey, so as to obtain some idea of the means she has for carrying on the struggle. The *data* for such an inquiry are notoriously loose. Turkey has few official statistics, and what there are, are mostly scattered, the particulars relating to the separate provinces and not to the whole empire. There is not even a good census or survey, the beginning of any formal 'statistique.' In the days before official statistics, however, it was surprising how much knowledge existed on many points on which we are apt to imagine there could be no information at all without the official agencies now employed. A statesman like Pitt, when he first proposed the income tax, was able to make a tolerably good guess as to its probable yield, although the land tax was antiquated, and there was no account of the valuations for the rates. Forty or fifty years ago there were no agricultural returns in England, but statisticians could make estimates, which on many points were near enough the mark for practical purposes. In treating Turkish statistics, therefore, without the aids we are used to in countries where there is a good administration, we need not be absolutely in the dark. The results will not be so authoritative or so complete in detail as it is expedient to have them, but

they will be much better than no result at all, and may leave no practical doubt on the more important questions to be answered.

"The first question which presents itself is that of population and area. Of this a very good account has lately been given by Mr. Ravenstein in a paper on the populations of Russia and Turkey read before the Statistical Society. Though differing in some detail, he sees reason to adopt generally the estimates of Messrs. Behm and Wagner, in their annual volume on the population of the earth. The estimate may be taken as the result of a careful analysis of statements made by travellers, and in our own consular reports, and of such official statistics for particular provinces as are accessible. We condense it as follows:—

Estimated Population and Area of Turkey.

Province of	Area. Square Miles.	Population.	Population per Square Mile.
In Europe.			
Adrianople	31,110	1,615,000	52
Danube	25,020	1,689,000	68
Kossova	12,470	936,000	75
Salonica	24,450	1,282,000	53
Yanina	14,250	1,436,000	101
Scutari (Albania)	13,720	400,000	22
Herzegovina	13,680	164,000	12
Bosnia	18,970	1,079,000	57
Crete	3,320	275,000	83
Army and navy	—	108,000	—
Constantinople	1,100	685,000	623
	158,090	9,669,000	61
In Asia.			
Islands and Samos	6,513	421,000	63
Asia Minor—			
Constantinople	5,100	796,000	156
Brussa	30,400	1,030,000	34
Smyrna	23,320	1,041,000	48
Kastamuni	19,770	772,000	39
Angora	26,790	514,000	19
Konia	39,120	755,000	19
Adana	14,730	335,000	22
Trebizond	14,370	938,000	67
Sivas	26,240	812,000	31
Kurdistan and Armenia—			
Erzeroum and Van	45,750	1,238,000	27
Diarbekr	39,550	1,140,000	29
Aleppo	46,140	880,000	19
Syria	35,530	2,250,000	64
Bagdad	99,970	2,000,000	20
El Hasa	31,890	218,000	68
Hejaz and Yemen	22,000	1,135,000	5
Army and navy	—	50,000	—
	724,183	16,325,000	23
Total	882,273	25,994,000	—

"We have given this statement with some detail, because it is desirable to show where the centres of population are—always an essential point in the questions now before us—and also in order to compare the proportion of the districts as to which we have statistics of some sort to the remaining districts of which we have less detail. As regards centres of population, it will be observed that Turkey in Europe, as a whole, has far more inhabitants to the square mile than Turkey in Asia; that there are three or four European provinces where the population is more dense than elsewhere, viz., the Danube, which is now the seat of war, Adrianople, and Kossova, which are immediately adjacent to the seat of war, and Janina, which lies comparatively distant. There are, however, one or two provinces in Asia, particularly Syria and Trebizond, and that part of Asia Minor near to Constantinople, where the population equals in density that of the more populous European provinces of Turkey. As regards the war in Europe, therefore, where the main struggle lies, it is a contest by Russia primarily against a population of about 4 or 5 millions living in the provinces of the Danube, Adrianople, and Kossova, and secondarily, against a remaining population of about 4 millions in Europe and 16 millions in Asia. The bulk of the Asiatic population is, however, in Asia Minor and Syria, and many parts are accessible by sea from Constantinople, and, practically, as near the scene of hostilities as the outlying parts of European Turkey. The statement, it will be observed, also omits the population of Egypt, although that tributary has, in fact, as is well known, contributed both men and money to the war.

"In whatever way we look at the numbers, if we are to look at numbers only, apart from political or race considerations, they are those of a considerable State. The important point seems to be that the resources of nearly the whole 25 millions are available in a contest; that there is not a nucleus, as in Russia, to which other parts of the Empire are suckers and not feeders. At no point has Turkey been maintaining an army for some ulterior object out of the surplus of the rest of the empire. There is no Transcaucasia or Central Asia to be a drain upon the central nucleus. Some parts of the empire, such as Kurdistan and Armenia, in consequence of the difficulty of communications, could probably aid very little in an external contest, or even a contest on some distant part of the Turkish frontiers; but Kurdistan and Armenia are directly made available, in consequence of Russia having made a separate attack on Armenia, and used up part of her resources for that attack. *Per contra*, it is to be observed that Turkey does not recruit from the whole population of the Empire, but only from two-thirds—the Mahomedan part—of the population. We doubt if this is material, because the adult males of fighting age belonging to these two-thirds must be ample for an indefinite amount of recruiting. Before Sadowa the whole population of Prussia was only about 18 millions. During the great wars at the beginning of the century the whole population of the United Kingdom was only about 16 millions. France in the same period, before her extensions through Napoleonic conquests, was only a country of about 26 millions. Yet we know what numerous armies Prussia had in her Sadowa campaign, and

France in the revolutionary wars, while our own armies at the beginning of the century were continuously very large, although we only sent handfuls to the vital points. More recently the Northern States of the American Union, with a population of 24 millions, kept on foot for several years an army of a million of men, and their opponent, with a population of only 8 millions to recruit from, had, at least, half-a-million under arms. Unless it comes to be a question of such prodigious numbers as France and Germany now reckon on being able to put in the field, a nation of 15 to 20 millions can supply what is, practically, an indefinite number of recruits. The difficulty comes to be one not of men, but supplies.

"If Turkey can find the supplies, she has, for all practical purposes, as extensive a recruiting ground at command as she can need. But how about the supplies? What is the free revenue of Turkey? Is she not totally unable to provide anything for interest on her debt? In answering these questions we need make no question, of course, of the potential resources and natural wealth of Turkey, on which all are agreed. We think, however, there is some evidence of a larger amount of developed resources than is sometimes thought. One sign of this is the foreign trade. Turkey publishes no monthly or annual returns of imports and exports, but the movements of shipping in the principal ports suffice to show how large a trade there may be. According to the *Almanach de Gotha*, the tonnage of ships entering Constantinople in 1874 was 4,603,000, and we learn from our consular reports that in the following ports or provinces of the empire the entries of shipping were as follow in a recent year:—Smyrna, 775,000 tons; Trebizond, 232,000 tons; Alexandretta, 157,000 tons; Cyprus, 158,000 tons; Jeddah, 193,000 tons; Adana, 139,000 tons; Prevesa, 51,000 tons; Jaffa, 19,000 tons—making a total of 1,720,000 tons, exclusive of Constantinople, and with Constantinople 6,323,000 tons. There are many ports of the empire besides those enumerated—Varna, Salonica, and others, respecting which we have not figures before us for a recent year, but a total of over 6,000,000 tons is by itself a large one. The annual entries of shipping in the foreign trade of the United Kingdom are only about four times that amount. Turkey, of course, has not a fourth of the foreign trade of the United Kingdom, while mere shipping statistics are no sufficient guide in such a matter, as Constantinople, for instance, may be largely only a port of call; but with all qualifications, an empire into whose ports over 6,000,000 tons of shipping enter annually must do a large trade. The entries of shipping into Russian ports, with which a comparison is instantly suggested, are only about 4,000,000 tons.

"That there is a large trade we have also direct evidence. According to the consular reports we have referred to, the exports and imports of the following ports or provinces in a recent year have been:—

	Imports.	Exports.
	£	£
Smyrna	3,483,000	3,896,000
Aleppo	960,000	760,000
Adana	445,000	446,000
Bagdad	211,000	230,000
Angora	70,000	138,000
Crete	400,000	494,000
Jaffa	110,000	258,000
Prevesa	94,000	238,000
Total	5,773,000	6,460,000

"Any one who compares this table with that of population above noticed, will at once see that the trade thus dealt with is only that of about a third or fourth part of the population of Turkey; that very little of the European trade is comprised; that Trebizond is omitted; and that there is also an omission of the Arabian ports. We should be safe in estimating that the total of the above ports does not comprise a third of the foreign trade of Turkey. Fortunately, there is a still more direct way of arriving at a conclusion on the matter. Although the Turkish Government does not publish trade accounts of its own, we can take the accounts of the principal countries with which, as the shipping statistics tell us, Turkey trades, and find out in this way what trade they do with Turkey. This will so far be as serviceable as if the Turkish Government made up the account. We learn, then, from the official statistics of the under-mentioned countries, that Turkey imports from and exports to them as follows:—

Trade of Turkey with the undermentioned Countries, as Compiled from their respective Official Statistics.

	Imports from.	Exports to.
	£	£
United Kingdom	5,923,000 457,000	7,444,000
France	1,840,000	7,520,000
Russia*	1,312,000	1,912,000
Italy	528,000	1,217,000
Austria (Turkish frontier)†	5,264,000	3,741,000
Greece	296,000	758,000
Total	15,620,000	22,592,000

* Converting the rouble at 2*s.* 6*d.*
† „ florin at 2*s.*

"The imports are less, and the exports more than they would be if the account was made up in Turkey, the imports being taken at the place from which they are sent, and, therefore, *minus* freight and charges, and the exports being taken at the place to which they

are sent, and, therefore, *plus* freight and charges; whereas when the account is made up at home it is the exports which are reckoned *minus* and the imports which are reckoned *plus* the charges of freight and conveyance. Adding 20 per cent. to the imports and deducting as much from the exports, we should arrive at a total of about 18 or 19 millions in each case, or about 36 millions in the aggregate, as the foreign trade of Turkey, a conclusion which is in agreement with the amount of the trade of the ports above specified. We are inclined to think the figure may be under the mark. There must be many more countries than those named with which Turkey trades, while for Austria there is only shown the trade with Turkey by the land and river frontier, and not the trade by sea. There is no doubt an error in the contrary direction, in consequence of the figures for France and the other countries, except England, comprising the trade with Roumania under the head of Turkey; but on looking at Roumanian statistics we find that Roumanian trade with these countries, both ways, does not amount to more than 5 millions, while Roumania itself has a trade with Turkey of nearly 2 millions. The error thus arising consequently cannot exceed 3 millions, and the Turkish trade with the minor countries will probably be as much as that, if not more. We conclude, then, that Turkey does a foreign trade of, at least, 36 millions annually.

"This view is confirmed in yet another way. Turkey levies an import duty of about 8 per cent., and as the gross yield of her customs in recent years appears to be about 1,800,000*l.*, this would give a total import value of about 20 millions, making some allowance for miscellaneous charges in addition to the 8 per cent.; and as Turkey is partly *exploited* by foreign capital, where the exports in normal years should exceed the imports, we may assume that the exports are, at least, as much as the imports. We thus arrive once more at a figure of nearly 40 millions as the aggregate foreign trade of Turkey.

"This total of foreign trade, comparing Turkey with other countries, is a considerable one. It is rather more than one-third the foreign trade of Russia, although the population of Turkey is less than one-third that of all Russia, and little more than one-third that of Russia in Europe, with which, perhaps, the comparison ought to be made. It is more than half the foreign trade of India, although India has 240 millions of people, as compared with the Turkish 26 millions. Generally a State of 26 millions, which has a surplus of 20 millions to exchange for foreign products, must have considerable resources to fall back upon for purposes of defence. If its people choose to go without some foreign products which they buy in ordinary years, they may have a good deal to spend on the equipment of their armies.

"The next evidence of resources is the yield of the more important taxes. Of these, as Turkey is an agricultural country, the most important for our present purpose is the tithe on agricultural produce. According to the last peace budget, before the present troubles began—viz., for 1875-76—the normal yield of the tithe throughout the whole empire, *i.e.*, without the special additions made to it—is stated as 6,264,000*l.*, which would make the agri-

cultural produce 62,640,000*l.* In addition, there is a sheep tax, the equivalent in pastoral districts of the tithe on agricultural produce, and the yield of this sheep tax is 1,868,000*l.*, which would make the corresponding produce 18,680,000*l.* The produce represented by the tithe and the sheep tax together would thus be 81,320,000*l.* All accounts agree that the defects and corruption of the administration are such that although the taxpayers are often oppressed by the mode of levying the taxes and the illegal exactions of the taxgatherers, yet the Government does not get its due—that the tithe and sheep tax it succeeds in collecting do not represent the whole produce, but something much less. But even a produce of 81,320,000*l.*, would represent a sum of more than 3*l.*, per head of the population, or 12*l.* to 15*l.* per family; and these sums, though they are no doubt small enough according to English notions, nevertheless, allowing for the much lower range of prices, as compared with England, at which the produce must be valued, may be consistent with a good deal of comfort among the people. If Turkish roads and communications were improved, nominal prices throughout the empire would rise; but in such a connection we must not think of nominal prices only. It may be said, of course, that Turkish budgets are wholly untrustworthy, and that we do not know the yield of the taxes to be so much as is stated, but the later budgets of Turkey in this respect happen to be strongly vouched for by budget commissions of some authority. Looking at the extent of the country, its natural fertility, the reported numbers of the people, and the extent of the foreign trade, we should be inclined to say that the figures are rather too low than too high—that with a better administration the tithe on the actual agricultural produce of Turkey would be far more than is stated.

"Such being the production of Turkey, we come more directly to the question of what the national revenue may be, and how much of that revenue, after defraying the necessary expenses of collection, civil administration and the preservation of internal order, is available for war. Generally, as regards the amount of revenue, we do not think there can be much doubt that Turkey has really raised annually somewhere about the sums stated in the recent budgets, viz., 21 or 22 millions sterling—and that its normal revenue from taxation, exclusive of tributes and miscellaneous, may be set down as nearly 20,000,000*l.* That sum would be a fourth part of a *minimum* estimate of the gross agricultural produce only, and such a revenue is, at least, a possible one. It may absorb the whole taxable margin of the people, and even far more than that margin if the average scale of living were what it is in England, but it would be possible to levy it without depopulation. The tribute from Egypt and other countries may be put down as amounting to 735,000*l.* more; and the receipts from salt mines and other property of the State, besides miscellaneous, may be estimated as amounting to 1,861,000*l.* more, without including any extra tribute which Egypt pays in the shape of completely equipped bodies of troops for military service, and other irregular contributions.

"The principal taxes of Turkey, besides the tithe and sheep tax already described, and the customs, already mentioned incidentally,

are the verghi, or property tax, yielding about 2,857,000*l.* according to the last budget, and the military exemption tax, yielding about 720,000*l.* The following will give an idea of the shares of the different taxes in the total 'taxation' of the country, omitting the revenue from other sources than taxation:—

	Amount.	Proportion to Total Taxation per Cent.
	£	
Verghi, or property tax	2,853,000	15·1
Foncier tax of Constantinople	138,000	0·7
Military exemption tax	720,000	3·8
Tithe	6,264,000	33·1
Additional 25 per cent. on tithes	1,566,000	8·3
Sheep tax	1,818,000	9·6
Pig tax	29,000	0·2
Customs	1,868,000	9·9
Tobacco tax	1,485,000	7·9
Silk duties	49,000	0·3
Spirit „	360,000	1·9
Tapon, or registration tax	869,000	4·6
Stamps	270,000	1·4
Agreement tax	45,000	0·2
Judicial fees	131,000	0·7
Miscellaneous	429,000	2·3
Total	18,899,000	100·0

"Thus the tithe and sheep-taxes, together with the additional percentage on the former tax, supply about half the revenue from taxation of the Turkish Government; the other direct taxes—viz., the verghi and military exemption-tax—yield about a fifth of that revenue, leaving only three-tenths of the taxation to be supplied by the customs, tobacco monopoly, and other indirect taxes. Turkey is in the condition where indirect taxation, as the easiest mode of getting money, is likely to be pushed to its utmost limit, so that the large recourse to direct taxation is itself a sign of pressure; but the proportions are certainly not such as to suggest anything fraudulent or untrustworthy in the estimates themselves. The economic condition of Turkey being primitive, the revenue of the country, like that of India, is for the most part obtained directly from the cultivators of the soil.

"Assuming for the present the estimate of revenue, how much is available for the purpose of war? In answering this question we are met, of course, at the outset by the magnitude of the former deficits of the Turkish Government. The last peace budget, to which we have referred, that of 1875-76, showed the following estimates of outlay:—

	£
Public debt	13,382,000
Civil list and pensions	1,789,000
Ministry of Finance	1,749,000
„ Interior and Police	2,640,000
„ War	3,513,000
„ Artillery	720,000
„ Marine	720,000
Ministries of Foreign Affairs, Justice, Commerce, and Public Instruction	803,000
Ministry of Public Works and Posts and Telegraphs	485,000
Guarantee of railways	222,000
Total	26,023,000

" Upon a revenue of 21 or 22 millions only, this shows a deficit of about four or five millions. It is obvious, however, that if Turkey did not pay the debt interest, the figures show, not only sufficient to carry on the administration, but an ample surplus. They would also show that even if some of the debt interest had to be paid, as is probably the case (for there are certain obligations which even the most impecunious Governments find it to their interests to meet), Turkey could still find ways and means. Deducting the charge for the public debt—viz., 13,382,000*l.*—the total expenditure left is only 12,600,000*l.*, between which and 22,000,000*l.*—the estimated amount of revenue—there is a difference of 9,000,000*l.*, a difference amply sufficient to make good 'supplementary estimates' to a considerable extent, as well as to pay certain charges on account of the debt. The reflection is immediately suggested that the difference may have been mainly employed in extravagance of every sort at, or on account of, the capital, but could be employed, if necessary, in meeting the army and navy expenditure, which only figures for 5 millions altogether in the above estimates. Allowing that about 3 millions were really appropriated to the debt, being the interest of orphan funds, mosque endowments, floating debt, and the like, that would give about 6 millions for extraordinary army and navy expenditure in time of need, in addition to the 5 millions regularly appropriated in the budget, or, say, 10 millions in all.

" Before considering how far such a sum would go, and what other resources Turkey may have, we may state that there really is evidence that the civil Government of Turkey is carried on for a very small sum, and that considerable amounts may be available for extraordinary war expenditure or the extravagance of the palace. According to the above account, the civil Government is carried on for about 7 millions, the items being:—

	£
Civil list and pensions	1,789,000
Ministry of Finance (collection of taxes)	1,749,000
„ Interior and Police	2,640,000
Ministries of Foreign Affairs, &c.	803,000
„ Public Works, &c.	485,000
Guarantee of railway interest	222,000
Total	7,668,000

"And of these it is mainly the third item only—the Ministry of Interior and Police—which really represents the outlay for internal government. No doubt a portion of the normal military expenditure of 5 millions is locally disbursed, and is really for the maintenance of internal order, but, *per contra*, a good deal of the above outlay must be at the capital. According to the detailed accounts from the provinces themselves, very little revenue is spent in them, and a great deal is forwarded to the capital. In the volumes of 'consular reports' there happen to be various statements on this head, from which, with the help of the population statistics above given, we make up the following table:—

Province.	Population.	Revenue exclusive of Customs.	Expenditure in Province.	Surplus.
		£	£	£
Adrianople	1,615,000	1,638,000	201,000	1,427,000
Aleppo	880,000	394,000	80,000	314,000
Adana	335,000	215,000	53,000	162,000
Angora	514,000	255,000	50,000	205,000
Bosnia	1,079,000	596,000	197,000	399,000
Syria and Palestine	2,250,000	742,000	664,100*	78,000
Total	6,673,000	3,840,000	1,245,000	2,585,000

* Including 240,000*l.* for military purposes.

"According to this, about a fourth part of the population of Turkey raises a revenue of nearly 4 millions from sources exclusive of customs and other indirect taxes, and only spends locally out of this amount about $1\frac{1}{4}$ million, the whole of the remainder, or $2\frac{1}{2}$ millions, as well of the whole of the customs and other direct taxes, being remitted from the province to the central Government. The population thus included appears to be a fair sample of the whole of Turkey, so that we have confirmation in these facts at once of the trustworthiness of the general estimates of revenue in the late Turkish budgets, and of the fact that local government is cheaply carried on, leaving large surpluses to be remitted to, or on account of, the central Government. We have only to multiply these items of gross and net revenue by four and to allow for the customs and other revenues which do not go through the hands of the local administrations to see that considerable sums must be available for Constantinopolitan extravagance or general war expenditure as the case may be.

"It would, of course, be impossible to give any exact account; but allowing that about 10 millions is the surplus of the direct taxes from the provincial Governments, we should be inclined to say that the real budget of the Constantinople Government, exclusive of borrowing operations, is now made up something as follows:—

	£		£
Surplus from provinces	10,000,000	Expenditure on debt	3,000,000
Receipts from customs.....	1,868,000	Civil list and pensions.....	1,789,000
„ tobacco.....	1,485,000	Ministry of Finance.....	1,749,000
Receipts from other indirect taxes and miscellaneous	2,000,000	Other ministries, exclusive of Interior and Police.....	1,288,000
Receipts from tributes, &c.	2,596,000	Guarantee of railways.....	222,000
		War	9,901,000
Total	17,949,000	Total	17,949,000

" In round numbers, Turkey may be able to double out of its revenue the sum set down in its budgets as the normal war expenditure. It may spend 10, instead of 5 millions. Actually it has spent a good deal more. We do not pretend to any certainty on this head, but we believe it has had the benefit of the following resources since a short time before the war commenced :—

	£
Two issues of paper money for 10,000,000*l.* (Turkish pounds), in all	8,000,000
Account current with the Imperial Ottoman Bank.....	5,000,000
Loan operation on balance of Egyptian tribute, after recent compromise with bondholders	2,500,000
Total	15,500,000

" In addition, it has had the benefit of whatever issues of bonds called ' serghi ' may have been made by the provincial Governments, but probably it has been impossible to issue these to any material extent. It must be observed also that the above issues of paper money and the loan operation on the Egyptian tribute are not yet completed so far as the public are concerned. They are partly in reserve and partly in the hands of the banks as security for advances. Probably we shall be near the mark in saying that, in addition to whatever surplus of free revenue there may have been, the Turkish Government has obtained through issuing paper money and borrowing on such assets as are left to it about 13 to 15 millions in all. Assuming the above estimate of 10 millions from surplus revenue, this would give a total of about 25 millions for the war expenditure of Turkey during the current year, of which about a fifth part was put down in the budget as the expenditure of a normal year.

" The sum is still a small one for the amount of fighting which Turkey apparently has got for it, and it would still be a small one if we allowed a million or two more for the extra help obtained from Egypt. It contrasts with a much larger outlay by Russia, although Russia to all appearance has been able to bring no more men than Turkey into line on the scene of conflict. But Turkey has had two advantages. First, in the European campaign, which is the principal one, it must have been able to quarter its armies on the districts they occupy. The vilayets of the Danube and Adrianople, where those armies have moved, are rich in grain, cattle, and sheep. Adrianople, as we have seen, sends in ordinary years a large surplus

to the central Government, and the vilayet of the Danube, we believe, is equally rich. If these provinces have sent no surplus to Constantinople this year, they must yet have been able to feed the armies encamped there. Russia has not had the same advantage, having only been able to occupy a corner of one of these provinces. Next, that the Turkish army is singularly cheap to maintain, as all accounts agree. Allowing for their different characteristics and circumstances, we may well believe that Turkey in a defensive war on its own territory can maintain the same armies as Russia for half or less than half the money.

"How do these calculations affect the future prospect? The conclusion we should incline to would be that both combatants must in another campaign be greatly exhausted financially, if they make as great efforts as they have done during the present one. This is obvious as regards Turkey. The amount of paper issued seems as yet by no means excessive for such a country, but it has sufficed to put gold to a great premium, and it may be doubted if any large sum additional—say 5 millions more—could be obtained in another twelvemonth from this source. Allowing that it can get 5 millions, and that the tribute and other assets are not quite exhausted, and would yield another 5 millions, the total, in addition to the surplus from revenue, would still be rather less than what has been spent since the war began. To obtain an equal sum then would strain the country in the form of an excessive forced currency or forced contributions for war purposes, besides leaving the Government under the burden of a costly preferential debt, which would be an obstacle to subsequent financial recuperation. Russia would also be greatly strained. Although it has the good fortune to be in better credit than Turkey, that credit is largely used up in obtaining funds to pay interest on its debt. It would not be easy, therefore, for Russia to add 40 millions more to its permanent interest-bearing debt, which we take to be the addition of the present year, except at a ruinous rate of interest, and probably it would be necessary for Russia, too, to increase enormously its paper issues. It is at last being fatally committed to an increased issue. It has borrowed from the imperial bank on account current a sum of about 17,500,000*l.* as against an equivalent addition to its issues by that bank, and over 5 millions have been borrowed within the last month, so that it will hardly be possible now for the remaining instalments of the *Emprunt d'Orient* to extinguish the debt as was evidently at first intended, and, so far, carried out. As similar outlays will be required in a new campaign, the difficulty of floating a new loan at all may increase and stereotype the borrowing of the bank, which was intended to be only temporary. But Russia has in its possession unspent, according to the imperial bank accounts, the large sum of 20 millions in cash, and this is a reserve of no small importance, which almost insures that at least for one more campaign Russia could spend as much as she has now done. If, however, she has, in fact, to use this reserve and increase largely the paper issues at the same time, she will be much embarrassed at the end, and the permanent addition to her debt will be serious.

"The conclusion seems to be that while Turkey can barely

make another effort equal to what she has made, Russia can almost certainly do so. At the same time the Turkish defence might well fall short of the full vigour displayed in the present campaign, and yet give embarrassment enough to her opponent, whose difficulties, and the necessity for greater and greater efforts, would increase with each fresh advance into Turkish territory, unless after most decisive victories. The balance is so nearly equal even yet that there is ample room for generalship and the fortune of war to turn the scale on either side."

III.—*The Excess of Imports.*

We extract from the *Times* of the 7th December, the following remarks on the inference drawn from the greatly-increased excess of imports over exports in recent years—that the nation is living on its capital. The subject of this excess was commented on by Mr. Bourne about a year ago in a paper read to the Statistical Society (see the *Journal* for March last), and in a measure, therefore, the present article in the *Times*, which takes up the subject from a new point of view, is a continuation of the discussion:—

"We showed in a recent article how little 'foreign competition' had to do with the existing depression in trade—what displacement of labour and capital would be apparent if foreign manufacturing was really taking the place of our own. The curious inability to measure economic facts, to assign an arithmetical value to the phrases so freely used, which we noticed in that article as the origin of the confused talk about foreign competition, is equally manifest in another attempt which is made to explain the present depression. We are told that the nation is living on its capital. The excess of imports over exports, it is said, is so great that, after making all allowance for the difference in the modes of valuing imports and exports, and for the sums due to the nation for freights and interest of capital invested abroad, there remains a considerable margin, which is only brought to us in exchange for securities which we sell, or for capital invested abroad which we are otherwise calling in. The conclusion is forthwith drawn that we are living on our capital; that this sale of securities or calling in of capital means the exchange of that capital for consumable commodities which come home to be consumed, and the consumption of which leaves the nation so much poorer than before. The result, it is further said, will be a stringent money-market, a tendency for bullion to leave us, and other evils, until enforced economy again puts matters to rights. No economist will deny that saving is the way at all times to become rich, and, as in the case of foreign competition, we are at one with the practical conclusion drawn; but, as in that case also, we must censure the arguments supporting it. The excess of imports certainly in no way proves that the nation is living on its capital. On the contrary, even in a time

like the present, there is a steady accumulation in progress. All that is effected by the vague talk in an opposite sense is the diffusion of a false belief which tends to paralyse our industrial energies, and to produce, so far, the very evils which are feared.

"Before the nation, as a whole, can be 'living on its capital,' it must have ceased to accumulate, and be selling out on balance what it possesses. If it is parting with capital in one direction and accumulating in another, we must set the one operation against the other, and see where the balance lies. The moment we do this we perceive what large conclusions the people are committed to who talk about the nation as consuming its capital. The usual accumulations of capital in England cannot be reckoned at less than 200 millions a-year. Annually there is a vast expenditure in improving land, in new buildings, in railway works, in new plant and machinery for every species of industry, in new furniture for dwelling-houses, in street and other improvements by local authorities, in additions in some form or another to the various descriptions of fixed capital which an old country possesses. In all these directions the annual outlay in the United Kingdom must come to, at least, about the amount stated. We know from the income tax returns that the annual value of house property alone in the ten years ending 1875, rose from 69 to 95 millions sterling, an increase of no less than 26 millions sterling, representing an increased capital value, at fifteen years' purchase only, of nearly 400 millions, or 40 millions a-year. In the same period the annual value of land increased from 62 to 67 millions, or 5 millions sterling, which represents, at 30 years' purchase, an increased capital value of 150 millions sterling, or 15 millions a-year. The railway capital, at the same time, according to the railway returns, increased from 455 to 630 millions, or 175 millions; that is, at the rate of 17½ millions yearly. The mines, canals, gasworks, quarries, ironworks, and 'other profits' also show, in the same period, an increase of 17 millions in the annual value assessed to the income tax, which represents at a moderate estimate, an annual addition of about 20 millions a-year to the capital of the country. The sums thus enumerated amount to nearly 100 millions sterling, and they include nothing for the investment of capital in many other forms of business, though we know from Schedule D that business in these forms has increased even more rapidly than the descriptions of property above enumerated. Exclusive of the above, the increase of Schedule D between 1865 and 1875 amounts to 114 millions; and the increase of capital to correspond, whatever way we reckon the capital value of the increased income, must be immense. The amounts enumerated also include nothing for furniture and works of art—the contents of houses—although the annual additions to these are probably not less than the annual additions to the dwellings themselves. The estimate, therefore, of 200 millions as the annual savings of the United Kingdom is by no means an extravagant one; and, to come to our present argument, this annual accumulation must cease and we must be selling out from our stock before we can be said as a nation to be living on our capital. It must not merely be shown that we are parting with

some of our capital. That may only mean that we are changing our investments—that we have exchanged as a nation our interest in some American railway, or part of our interest in the securities of the American Government, for an addition to our railway system at home, or for some other home investment. The operations must be looked at as a whole, and not merely a fragmentary part of them must be considered.

"But looking at the matter in this way, we perceive at once that even in a year like the present there must be in some directions an immense saving in progress. As regards house building we know that at the present time it is as active, or more active, than at any time during the past ten years; that the accumulation in this direction is probably now at a *maximum* and not at a *minimum*. As regards land we also know that the work of reclamation and improvement is constantly in progress. In Great Britain the addition to the cultivated area in the present year, apart from improvements in land formerly cultivated, amounts to 160,000 acres. As regards railways it is impossible yet to state the capital outlay for the present year; but last year about 20 millions were spent in new railway works (although the complaints of dulness were as rife last year as they are now), and we gather from the accounts of the principal companies for the first half of the present year that the outlay has continued. Indeed, it is constantly urged by some that railway dividends are endangered by the continuous and unceasing outlay of new capital. We have fewer *data* as to the other kinds of property until the income tax returns for the current year are made up and published, and possibly in ironworks and in other ways, there is less new outlay at present than there is immediately after very prosperous years; but it is quite certain that in the aggregate here, too, a considerable saving is in progress. It is well understood in business that times of dulness are the best for increasing and improving plant, substituting improved machinery for what is old and wearing out, and generally making arrangements for the steady progress of the staple trades of the country which are constantly increasing with the equally steady increase of population. Such is the division of labour also that, if the investment of new capital were reduced to any material extent below the average, the effect would be instantly seen in vast masses of labourers out of employment, and a great increase of pauperism; whereas there is nothing of that sort yet visible which may not be accounted for by a very small diminution of the ordinary annual investment of new capital. But, not to include uncertain *data* of any kind, it is evident from the prosperity of the building trades, and from the known outlay on land and railways which we have referred to, that the accumulation in 1877 in some directions must at least be about 100 millions sterling, and we doubt if it really falls much short of the average 200 millions. To prove that we are living on our capital, therefore, it must be shown that a sum equal to between 1 and 2 hundred millions and more is wasted or spent in some other direction. Those who point to the excess of imports as a proof that this is the direction in which the nation is living on its capital, must be taken to mean that the excess of imports, after

making all deductions for freights and other charges and for what comes to us as interest of our foreign capital, is over 100, perhaps over 200, millions sterling. Unless the excess is as great as thist all that it could show would be that the country is changing its investments—that it is diminishing the investment of capital abroad, and increasing the investment at home; but on balance it is investing and not spending.

"There is no contention, however, that the excess of imports is anything like so great as has been stated. During the last six years the nominal excess has been:—

[000,000's omitted.]

	Imports.	Total Exports.	Excess of Imports.
	£	£	£
1871	331,	284,	47,
'72	355,	315,	40,
'73	371,	311,	60,
'74	370,	298,	72,
'75	373,	282,	91,
'76	375,	257,	118,

And from these figures, to show the true excess, great deductions must be made, as every authority allows and the most ordinary common-sense will show. The difference in valuation through the exports being valued *minus* the freight and charges to the place of destination, and the imports being valued *plus* the freight and charges from the place of dispatch, must amount to many millions. The interest on our foreign investments must also be many millions, no good authority that we know of making the annual sum less than 30 millions, and the more correct sum being probably twice that figure. Without going into minute estimates, we may point out—what indeed lies obviously on the surface—that the years 1871, 1872, and 1873 were years in which the nation was largely investing capital abroad; that the nominal excess of imports in those years, therefore, amounting to between 40 and 60 millions annually, was a balance we remained entitled to after crediting foreign nations in the account with the amount of our new investments abroad; and that the excess of imports in subsequent years can only show a sale of securities or calling-in of capital to the extent of the difference between the excess now apparent and the nominal excess of those years *plus* the capital we then invested abroad. In other words the *maximum* sale of securities or calling-in of capital in any one year since 1873 must be less than the difference between the excess of imports in that year and the subsequent excesses—viz.:—Excess of imports in 1874, less 60,000,000*l.*, the excess of 1873, 12,000,000*l.*; excess of imports in 1875, less excess of 1873, 31,000,000*l.*; excess of imports in 1876, less excess of 1873, 58,000,000*l.* These are the limits within which we can have been selling securities or calling-in capital from abroad, even if the excess of imports in former years had not arisen after crediting the foreigner with the loans we were making, but the deduction to be made in the computation on

account of that credit must be very large. Looking at the amount of foreign issues of every sort in 1871-73, we think it would be a moderate estimate to put down our new foreign investments in those years at not less than 50 or 60 millions sterling annually, in which case the above figures would show that there is yet no calling-in of capital in progress—that having ceased to lend to foreign nations we now ascertain what the normal state of trade is between us and them. Even if we made a less deduction, if we considered that we were exporting only 20 or 30 millions of capital annually in 1871-73, it would only be since the beginning of last year we can have been calling-in capital on balance, and the amount so called in is not more than between 30 and 40 millions sterling annually. This is all the 'living on our capital' which can be in question, and it is obviously very much less than the new investments at home which have been simultaneously in progress. In other words, there is no proof at all in the figures, turn them how we may, that the nation is living on its capital. It is doubtful whether they even show any considerable sale of securities or calling-in of capital at all, but the *maximum* possible amount of the securities sold or capital called in falls greatly short of the accumulations simultaneously being made at home. What is more, the figures, large as they are, are ludicrously small compared with the whole mass of English capital. Our savings in the last ten years, at the rate of 200 millions a-year, which is a *minimum* estimate, would amount to 2,000 millions sterling, Even if we were losing 40 millions of capital for a year or two, therefore, the annual loss would not be more than 2 per cent. of the additions to our capital during the previous ten years—a fact which would be serious in many ways, but still very far short of showing the ruin of the country, or of showing a loss which could not be quickly made up. To put the matter another way, we should be losing a sum for a year or two equal to a fifth part of our average annual accumulations. But we are not 'losing' even this 2 per cent. on our previous ten years' accumulations, or fifth part of our average annual savings; we are not living to that extent upon our capital. We are only substituting *pro tanto* an investment at home for an investment abroad, and we are making besides large accumulations at home.

"To what extent are we really parting with our foreign securities or calling-in our foreign investments, and what will be the effect on the money-market? We should recommend very great caution before the conclusion is accepted that the nation as a whole has been diminishing its investments abroad to any material extent permanently. It must be remembered that there is a considerable amount of cosmopolitan capital which is freely moved, and that the circumstances of the last two or three years have tended to cause a transfer of a part of this fund from England to foreign nations. The produce of our agriculture has been below the average, and to that extent the annual income of the nation has been less. It has been necessary to increase suddenly our imports of food from abroad. Trade in the United States has also become more active than it was, requiring consequently the

supply of more capital. The foreign credit on England is thus temporarily increased, and to meet the circumstances a part of the cosmopolitan fund is transferred from England for employment elsewhere, which can readily be done by the transfer of securities. But the amounts passing are insignificant compared with the whole capital of the United Kingdom, or of the foreign nations to which a part of this movable fund passes temporarily. Special sales of securities to the extent of two or three millions would be large operations for the exchanges, but they would not be considered large in a question of a nation like England losing its capital. Nor is the transfer necessarily permanent. A good harvest next year would diminish the foreign credit on England, or trade may improve with us, causing a demand for more capital and retransfer here of a part of the cosmopolitan fund. The movements to and fro of this floating capital are obviously important to exchange dealers, but the country losing it is not, therefore, 'living on its capital,' and the countries receiving it are not acquiring capital permanently to the detriment of others. In addition, during the last year or two the nation may have parted with some of its foreign securities permanently, sales being induced by the great discredit of foreign issues; but apart from the evidence already given it must be plain to those who will reflect that, as a rule, the sales by the 'public' in England during the last year or two were not sales to foreigners, but they were sales to a speculative class in London, who were ruined by the purchases, and who still retain the securities for what they are worth. If, indeed, there had been a larger transfer abroad of securities not now yielding any interest, it might have been better for us, and it would certainly have been advantageous to exchange them for the means to invest at home.

"We should not look, therefore, for any unusual effects on the money market, or other mischief in consequence of the large nominal excess of imports over exports. If there is a momentary balance against us in consequence of our bad harvests, it is being adjusted most naturally by a transfer of securities, which is probably only temporary, and we have plenty of means for adjusting similar balances for a long time to come. The situation is no doubt such that money tends to be dearer with us than it would have been if our harvests had been good; but all experience has shown that the cosmopolitan fund moves readily, and a moderate increase of our rates for money, as, indeed, is proved by the experience of the last two months, will suffice to retain capital in Lombard Street, though, as yet, the rates have not been raised to a point at which a strong influx of bullion will occur. The money market is much more likely to be affected by a demand for bullion for the United States and Germany, the former to resume specie payments, and the latter to continue its new coinage operations. But the stringencies which may thus arise are not to be traced to causes of a very different order, and which would have deeper and more far-reaching effects if they were really in operation as supposed."

IV.—*Agricultural Returns for* 1877.

We condense as follows the report and principal tables in the Agricultural Returns for 1877, issued by the Board of Trade :—

"The data for the Agricultural Returns of Great Britain for the year 1877 were collected, as in previous years, by officers of the Inland Revenue Department in Great Britain, and by officers under the direction of the local authorities in the Isle of Man and the Channel Islands.

"An important alteration has been made this year in the date of collecting the returns, the 4th of June having been selected for this purpose instead of the 24th or 25th as in former years. It is satisfactory to report that the earlier publication of the returns, which was the object of this change, and of other steps which have been taken, has been secured. The usual summary of the returns was issued on the 21st of August instead of in the middle of September as in previous years, and the present complete tables and report are issued at the end of September, or nearly four months sooner than was formerly the case, so dispensing with the intermediate publication of the county summary of returns, which had for the last three years been issued in October.

"It is satisfactory to find that the change of date of collection has affected only very slightly the returns for purposes of comparison with past years. It has also been found that the occupiers have more leisure for filling up the schedule at the earlier than at the later date, when in many places the hay harvest is already commenced, and the change has induced greater readiness in giving the information. The officers of inland revenue notice in several instances that the schedules have been filled up this year by occupiers who had before flatly refused their help, while in many cases where the acreage under crop has been estimated, it is not from any opposition on the part of the farmers, but because the delay prevents the collecting officer from tabulating the parish and district returns, and he therefore prefers to make an estimate at once. Altogether the number of returns from occupiers of land is 556,962, as compared with 557,341 in 1876, and from owners of live stock 5,335, as compared with 5,487 in 1876, showing a slight diminution, which amounts, however, for the reason explained, to a substantial improvement. In point of fact the acreage obtained by estimate in England in the absence of occupiers' returns is this year only 2,036,931 acres, as compared with 2,178,515 acres estimated in 1876. In Wales the acreage estimated is 3,554 acres only, as compared with 5,641 in 1876, and in Scotland 49,274 acres only, as compared with 53,376 in 1876. Though the accuracy of the general results obtained is no longer in question, it would of course be desirable to reduce still farther the amount of the acreage which it is necessary to estimate in the absence of the occupiers' returns, and it is satisfactory to find that the opposition formerly manifested is diminishing.

"The total quantity of land returned in 1877 as under all kinds of crops, bare fallow and grass, amounted, for Great Britain, to

31,711,000 acres. For Ireland the returns obtained by the Registrar-General show a total of 15,427,000 acres, and for the Isle of Man and Channel Islands the totals are respectively 94,433 acres and 30,204 acres. Thus for the whole of the United Kingdom the cultivated area in 1877 was 47,263,000 acres, exclusive of heath and mountain pasture land, and of woods and plantations.

"As regards Great Britain the cultivated area has increased by 160,000 acres since 1876, and by 1,372,000 acres since 1869, the respective increases in each division since the latter year being 942,000 acres for England, 200,000 acres for Wales, and 230,000 acres for Scotland. Some portion of this increase is doubtless due to more accurate returns, and to the greater experience of the collecting officers enabling them to detect accidental errors, but it is certain that the greater part is caused by reclamation of marsh or mountain land, which is often gradual in its operation and renders it difficult to say for some years whether the additional acreage can be classed as cultivated land.

"In Ireland there is an apparent decrease from last year of 297,000 acres in the cultivated area, owing to a separate heading being made for 'barren mountain land,' which was often in previous years included under the head of 'grass,' in consequence of having some live stock on it when the returns were being collected.

It is remarked by one or two of the collectors, that the conversion of arable land into pasture has this year received a check from the large importation of American meat, but most of the collectors report this conversion to be in progress, and speak of the scarcity of labour and high price of meat as being the chief causes of the change.

"As regards corn crops, the area under wheat in the United Kingdom was 3,321,000 acres, being an increase of 6 per cent. over 1876, but the figures are still much below those of past years. The autumn seed time is reported to have been fairly favourable for this important crop, but the rise in the price of wheat did not take place sufficiently early to increase materially the breadth sown.

"The acreage under barley in Great Britain shows a decrease from last year of more than 4 per cent., while for oats the figures show little variation either in Great Britain or in Ireland, where this crop occupies no less than 1,472,000 or nearly 79 per cent. of the total acreage under corn crops.

"The variations in the other corn crops do not call for much remark, and the total acreage under corn is almost the same as in 1876; but it must be remembered that there had been for some years past a very considerable decline, amounting for the United Kingdom since 1869 to 897,000 acres, or about 8 per cent.

"Turning to green crops, potatoes in Great Britain show a slight increase over the figures of last year, though they are still below those of any other year since 1867; while in Ireland there is a still further decline on the reduced acreage of late years. Turnips and swedes in Great Britain have occupied 72,000 acres less

than in 1876, and their area is now smaller than in any of the past ten years. Some of the collectors state that the decrease is owing to lands intended for turnips but not sown at the earlier date of the returns having been erroneously excluded. It is also alleged that the uncertainty of the crop is the chief cause of the decline. Other green crops in Great Britain show a considerable increase, most of which is in vetches or tares, which were sown on 25 per cent. more land than in 1876; and the aggregate acreage under green crops shows very close agreement with the previous year.

"As regards other crops, the small acreage under flax in Great Britain has slightly decreased, and in Ireland it has also decreased, being now only 123,000, as compared with 253,000 in 1867.

"Hops have again increased in Great Britain, and are now grown on 71,000 acres.

"Less land has been left under bare fallow in Great Britain than in 1876, owing to the more favourable seed time, and if allowance be made for the acreage of turnips before alluded to as not being sown at the earlier date of the returns, the difference will be considerable.

"As regards clover and rotation grasses in Great Britain, there is a decrease of 47,000 acres, or 1 per cent.; but in permanent pasture for hay there is an increase of 138,000 acres, and in pasture not for hay of 75,000 acres. It is generally stated in the collectors' report that the scarcity of keep during the past winter induced farmers to devote as much land as possible to the hay crop. In Ireland, permanent pasture is less by 362,000 acres than in 1876, but the reason stated for the decrease in the total cultivated acreage may be held to account for this apparent decline.

"There is an increase this year of 6,000 acres in the area of orchards in Great Britain, which some of the collectors ascribe to new plantations of fruit trees induced by the increasing demand for fruit in the large towns. Considering how largely the importation from abroad of fruits of all kinds has increased of late years, it would seem probable that much more land might be profitably employed in this way, the only drawback being the recurrence of late spring frosts by which the hopes of a good fruit crop are so often blasted.

"Taking now the various descriptions of live stock, a satisfactory increase may again be noted in all the classes of horses enumerated in Great Britain. Agricultural horses present only a trifling increase, and it is stated that the employment of steam cultivation in some counties enables the farmers to economise labour in this respect. Brood mares and young horses are more numerous by 3 per cent., since 1876, and by 7 per cent. since 1875. Our stock of horses has also been materially augmented by the imports from abroad, which numbered 40,763 in 1876, and 24,379 in the first eight months of the present year, the exports of British horses having been in these periods respectively 2,700 and 1,479.

"There is again a large falling off in the number of horned cattle in Great Britain in spite of the steady increase of late years in pasture land. The decrease since 1876 in the various classes of cattle have been 1 per cent. in cows, 6 per cent. in other cattle

above two years of age, and 1 per cent. in young cattle, making the total decrease in all kinds of cattle 2½ per cent. Scarcity of keep, foot-and-mouth disease, and fear of cattle plague are among the causes mentioned by the collectors as accounting for the continued falling off, and the late restrictions upon importation and removal are also stated to have affected the numbers. In some counties, moreover, many farms are said to have changed hands during the past year, while some have remained untenanted, and the stock of cattle has thus been reduced. In Ireland also cattle have decreased by about 3 per cent.

"There is a small decline in the stock of sheep in Great Britain, which is also ascribed to scarcity of keep. Lambs, however, are rather more numerous, and the total number of sheep and lambs thus differs very slightly from that of 1876, although a falling off of more than 2 millions, or nearly 7 per cent. is shown since 1874. The returns of cattle, and especially of sheep and lambs, in particular counties, vary somewhat from those of the past year, owing to the earlier date of the returns, according as it is the habit in each county to breed or to buy stock for the summer's feed.

"Pigs in Great Britain have increased by 8 per cent. during the past year. The collectors state in some cases that more pigs are being kept instead of cattle and sheep, and also that the last two years have been free from disease. It is also remarked that the earlier date would bring into the returns many young pigs, which at the later date would have been sold to cottagers, and thus have been unrecorded.

"The usual table showing the relative course of agriculture in the counties of England, arranged in two divisions of chiefly grazing and corn-growing counties, has been prepared.

"The *grazing*, or *western*, division includes twenty-one counties: —Northumberland, Cumberland, Durham, Westmoreland, York (North and West Ridings), Lancaster, Chester, Derby, Stafford, Leicester, Salop, Worcester, Hereford, Monmouth, Gloucester, Wilts, Dorset, Somerset, Devon, and Cornwall.

"The *corn*, or *eastern*, division includes twenty-one counties:— York (East Riding), Lincoln, Nottingham, Rutland, Huntingdon, Warwick, Northampton, Cambridge, Norfolk, Suffolk, Bedford, Oxford, Bucks, Berks, Hants, Hertford, Essex, Middlesex, Surrey, Kent, and Sussex.

"Although the number of the counties is the same in each of these groups the total acreage is larger in the grazing than in the corn division, in the ratio of 53 to 47 per cent. of the total acreage under crops and grass in England.

"On a comparison of the figures with those for last year, it is again found that there is little variation in the distribution of the crops between those great divisions. Thus in the grazing counties, the acreage of the corn crops is 37·8 per cent. of the total for England, leaving the proportion of 62·2 per cent. for the corn counties, and these were also the exact percentages in 1876. As regards green crops the acreage in the grazing counties is 48·1 per cent. of the total for England, leaving 51·9 per cent. as the proportion in the corn counties, and the corresponding percentages

in 1876 were 47·9 and 52·1 per cent., showing hardly any variation. As regards permanent pasture, the acreage for hay in the grazing counties is 62·8 per cent. of the total for England, and the acreage not for hay is 68·4 per cent. of the total, leaving 37·2 and 31·6 respectively as the proportions in the corn counties; while last year the acreage for hay in the grazing counties was 62·6 per cent. of the total, and not for hay 68·6 per cent., again showing hardly any variation. In particular crops, as well as in the great groups, there is almost as little variation, as an examination of the tables will show.

"It is the same with the distribution of the live stock. The number of horses used for agriculture this year in the grazing counties is 48 per cent. of the total, and in the corn counties 52 per cent., the percentages last year being 48·1 and 51·9. Of horses unbroken, &c., the number this year in the grazing counties is 55·3 per cent. of the total, and in the corn counties 44·7 per cent., the percentages last year being 55·8 and 44·2 per cent. Of cattle the number this year in the grazing counties is 65·9 per cent. of the total, and in the corn counties 34·1 per cent., the percentages last year being 65·8 and 34·2. Of sheep the number this year in the grazing counties is 52·9 per cent. of the total, and in the corn counties 47·1 per cent., the percentages last year being also 52·9 and 47·1. Of pigs the number this year in the grazing counties is 48·6 per cent. of the total, and in the corn counties 51·4 per cent., the percentages last year being 48·9 and 56·1. Thus in no direction is there any significant variation in the distribution of crops and live stock. The principal characteristics of cultivation in the two divisions remain what they were, viz., that in the corn counties about 40 per cent. of the cultivated acreage is devoted to corn crops, and only 31·7 per cent. to permanent pasture, while in the grazing counties these proportions are more than reversed, the acreage under corn crops being there only 21·4 per cent. of the cultivated acreage of the division, while the acreage of permanent pasture is 56·1 per cent. of that acreage.

"The returns of the crops and live stock in British possessions and foreign countries, which have usually been appended to the agricultural returns for Great Britain, are this year omitted, partly in order to avoid the delay which their preparation caused to the publication of our own returns, and also because it is intended that the chief results shall in future be included in the statistical abstracts relating respectively to the colonies and to foreign countries, to which they appear more properly to belong. As regards the returns of agriculture in foreign countries, it must also be remembered that such statistics are usually issued at less frequent intervals than in this country, and being in more detail they occupy a longer time in their compilation abroad. The result is that they are not issued at such periods as to afford annually new data for comparison with the annual statistics of the United Kingdom."

Total Area and Acreage under each kind of Crop, Bare Fallow, and Grass; and number in 1876, in each Division of Great Britain, with similar Particulars

	England.		Wales.		Scotland.		Great Britain.	
	1877.	1876.	1877.	1876.	1877.	1876.	1877.	1876.
	TOTAL AREA AND ACREAGE UNDER CORN CROPS,							
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Total area	32,597,	32,597,	4,721,	4,721,	19,496,	19,496,	56,815,	56,815,
Total acreage under crops, bare fallow, and grass	24,312,	24,201,	2,731,	2,712,	4,668,	4,638,	31,711,	31,552,
Corn Crops—								
Wheat	2,987,	2,823,	100,	94,	81,	78,	3,168,	2,996,
Barley or bere	2,001,	2,109,	147,	154,	270,	270,	2,418,	2,533,
Oats	1,490,	1,534,	239,	242,	1,025,	1,022,	2,754,	2,799,
Rye	49.	46,	2,	2,	10,	9,	60,	56,
Beans	470,	488,	3,	4,	25,	27,	498,	518,
Peas	306,	288,	4,	3,	2,	2,	312,	293,
Total of corn crops	7,303,	7,288,	495,	499,	1,413,	1,408,	9,210,	9,195,
Green Crops—								
Potatoes	304,	305,	43,	43,	166,	155,	512,	503,
Turnips and swedes	1,496,	1,561,	71,	72,	507,	512	2,074,	2,146,
Mangold	348,	338,	8,	7,	2,	2,	358,	348,
Carrots	15,	15,	—	—	1,	1,	16,	16,
Cabbage, kohl-rabi, and rape	176,	173,	1,	1,	5,	5,	183,	179,
Vetches and other green crops, except clover or grass	420,	360,	7,	6,	15,	15,	442,	380,
Total of green crops	2,759,	2,752,	130,	129,	696,	690,	3 585,	3,572,
Clover, sanfoin, and grasses under rotation—								
For hay	1,609,	1,672,	207,	213,	360,	356,	2,176,	2,241,
Not for hay	1,128,	1,115,	145,	147,	1,044,	1,037,	2,317,	2,299,
Total of clover, &c.	2.737,	2,787,	352,	360,	1,404,	1,393,	4.493,	4,540,
Permanent pasture or grass not broken up in rotation (exclusive of heath or mountain land)—								
For hay	3,239,	3,124,	399,	383,	120,	114,	3,759,	3,621,
Not for hay	7,619,	7,565,	1,333,	1,315,	1,018,	1,015,	9,969,	9,895,
Total of permanent pasture, &c.	10,858,	10,689,	1.732,	1,698,	1,138,	1,129,	13.728,	13,516,
Flax	7,	7,	—	—	—	—	7,	8,
Hops	71,	70,	—	—	—	—	71,	70,
Bare fallow or uncropped arable land	576,	608,	23,	26,	17,	18,	616,	651,
	NUMBER OF LIVE STOCK, AS RETURNED UPON							
Horses (including ponies), as returned by occupiers of land—								
Used solely for purpose of agriculture, &c.	761,	759,	71,	71,	139,	139,	71,	969,
Unbroken horses and mares kept solely for breeding	309,	299,	59,	57,	50,	50,	418,	406,
Total of horses	1,070,	1,058,	130,	128,	189,	189,	1,389,	1,375,
Cattle—								
Cows and heifers in milk or in calf	1,558,	1,573,	254,	260,	395,	393,	2,207,	2,226,
Other cattle—								
2 years of age and above	1,072,	1,150,	120,	135,	272,	282,	1,464,	1,568,
Under 2 years of age	1,350,	1,353,	242,	242,	435,	456,	2,027,	2,050,
Total of cattle	3,980,	4,076,	616,	637,	1,102,	1,131,	5,698,	5,844,
Sheep—								
1 year old and above	11,482,	11,586,	1,974,	2,002,	4,689,	4,670,	18,145,	18,258,
Under 1 year old	6,848,	6,734,	888,	871,	2,280,	2,320,	10,016,	9,925,
Total of sheep	18,330,	18,320,	2,862,	2,873,	6.969,	6,990,	28,161,	28.183,
Pigs	2,115,	1,924,	231,	215,	153,	154,	2,499,	2,294,

* From Returns prepared by the Registrar-General for Ireland, and laid before Parliament.

of Horses, Cattle, Sheep, and Pigs, as returned upon the 4th June, 1877, *and 25th June for Ireland,* and with Total for United Kingdom.* [000's omitted.]

Ireland.		Isle of Man.		Channel Islands. Jersey.		Channel Islands. Guernsey, &c.		United Kingdom, including Isle of Man and Channel Islands.		
1877.	1876.	1877.	1876.	1877.	1876.	1877.	1876.	1877.	1876.	
Green Crops, Bare Fallow, Grass, &c.										
Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
20,820,	20,820,	145,	145,	29,	29,	19,	19,	77,829,	77,829,	Total area.
15,427,	15,725,	94,	93,	19,	19,	11,	11,	47,263,	47,401,	Total acreage under crops, bare fallow, and grass.
143,	120,	6,	6,	3,	3,	1,	1,	3,321,	3,125,	Corn Crops— Wheat.
227,	221,	8,	7,	—	—	—	—	2,652,	2,762,	Barley or bere.
1,472,	1,487,	12,	13,	—	—	1,	1,	4,239,	4,299,	Oats.
10,	9,	—	—	—	—	—	—	71,	65,	Rye.
9,	11,	—	—	—	—	—	—	507,	529,	Beans.
1,	1,	—	—	—	—	—	—	313,	295,	Peas.
1,862,	1,849,	26,	26,	3,	3,	2,	2,	11,103,	11,075,	Total of corn crops.
872,	881,	4,	4,	4,	4,	1,	1,	1,393,	1,392,	Green Crops— Potatoes.
336,	345,	8,	8,	1,	2,	—	—	2,419,	2,500,	Turnips and swedes.
†49,	48,	—	—	—	—	—	—	408,	397,	Mangold.
‡3,	3,	—	—	—	—	—	—	20,	20,	Carrots.
47,	41,	—	—	—	—	—	—	230,	221,	Cabbage, kohl-rabi, and rape.
48,	45,	—	—	1,	1,	2,	2,	492,	428,	Vetches and other green crops, except clover or grass.
1,355,	1,363,	12,	12,	6,	7,	3,	3,	4,962,	4,958,	Total of green crops.
1,925,	1,861,	9,	9,	3,	3,	1,	—	6,459,	6,441,	Clover, sanfoin, and grasses under rotation— For hay.
		26,	25,	1,	1,	1,	1,			Not for hay.
1,925,	1,861,	35,	34,	4,	4,	2,	1,	6,459,	6,441,	Total of clover, &c.
10,145,	10,507,	3,	3,	1,	1,	3,	3,	23,903,	24,053,	Permanent pasture or grass not broken up in rotation (exclusive of heath or mountain land)— For hay.
		18,	18,	4,	4,	2,	2,			Not for hay.
10,145,	10,507,	21,	21,	5,	5,	5,	5,	23,903,	24,053,	Total of permanent pasture, &c.
123,	133,	—	—	—	—	—	—	131,	141,	Flax.
—	—	—	—	—	—	—	—	71,	70,	Hops.
17,	12,	1,	—	—	—	—	—	633,	663,	Bare fallow or uncropped arable land.
the 4th June, 1877, and 25th June, 1876.										
496,	480,	4,	3,	2,	2,	2,	2,	1,894,	1,863,	Horses (including ponies), as returned by occupiers of land— Used solely for purpose of agriculture, &c.
		2,	2,	—	—	—	—			Unbroken horses and mares kept solely for breeding.
496,	480,	6,	5,	2,	2,	2,	2	1,894,	1,863,	Total of horses.
1,521,	1,533,	7,	7,	6	6,	3,	3,	3,745,	3,775,	Cattle— Cows and heifers in milk or in calf.
879,	928,	3,	3,	1,	1,	1,	1,	2,348,	2,500,	Other cattle— 2 years of age and above.
1,596,	1,653,	10,	9,	4,	4,	3,	3,	3,639,	3,720,	Under 2 years of age.
3,996,	4,114,	20,	19,	11,	11,	7,	7,	9,732,	9,995,	Total of cattle.
2,534,	2,579,	39,	41,	—	—	1,	1,	20,719,	20,879,	Sheep— 1 year old and above.
1,455,	1,429,	29,	30,	—	—	—	—	11,501,	11,384,	Under 1 year old.
3,989,	4,008,	68,	71.	—	—	1,	1,	32,220,	32,263,	Total of sheep.
1,468,	1,424,	6,	6,	7,	6,	5,	5,	3,984,	3,734	Pigs.

† Including beet root. ‡ Including parsnips.

Percentage of Total Cultivated Acreage under Various Kinds of Crops, and of the Number of each Kind of Live Stock to every 100 *Acres*

	England.		Wales.		Scotland.	
	1877.	1876.	1877.	1876.	1877.	1876.
Percentage of Total Cultivated Acreage						
Corn crops (including beans and peas)	30·0	30·1	18·1	18·4	30·2	30·3
Green crops	11·3	11·4	4·8	4·8	14·9	14·9
Bare fallow	2·4	2·5	0·8	0·9	0·4	0·4
Grass—						
Clover, &c., under rotation	11·3	11·5	12·9	13·3	30·1	30·0
Permanent pasture	44·7	44·2	63·4	62·6	24·4	24·4
Other crops	0·3	0·3	0·0	0·0	0·0	0·0
Total	100·0	100·0	100·0	100·0	100·0	100·0
Percentage of Total Acreage of Corn Crops						
Wheat	40·9	38·8	20·3	18·9	5·7	5·6
Barley or bere	27·4	29·0	29·7	30·8	19·1	19·2
Oats	20·4	21·0	48·4	48·6	72·5	72·6
Rye	0·7	0·6	0·3	0·3	0·7	0·6
Beans	6·4	6·7	0·6	0·7	1·8	1·9
Peas	4·2	3·9	0·7	0·7	0·1	0·1
Total	100·0	100·0	100·0	100·0	100·0	100·0
Percentage of Total Acreage of Green Crops						
Potatoes	11·0	11·2	33·1	32·9	23·8	22·4
Turnips and swedes	54·2	56·7	54·7	55·6	72·8	74·3
Mangold	12·7	12·3	6·0	5·7	0·3	0·3
Carrots	0·5	0·5	0·3	0·3	0·2	0·1
Cabbages, kohl-rabi, and rape	6·4	6·3	1·0	1·0	0·7	0·8
Vetches, lucerne, and any other green crop, except clover or grass	15·2	13·0	4·9	4·5	2·2	2·1
Total	100·0	100·0	100·0	100·0	100·0	100·0
Number of each Kind of Live Stock to every						
Horses	4·4	4·4	4·7	4·7	4·0	4·1
Cattle	16·4	16·8	22·6	23·6	23·6	24·4
Sheep	75·4	75·7	104·8	105·9	149·3	150·7
Pigs	8·7	8·0	8·4	7·9	3·3	3·3

Acreage of Corn and Green Crops under the several Descriptions of such Crops, and under Cultivation, in each of the Years 1877 *and* 1876.

Great Britain.		Ireland.		United Kingdom, including Isle of Man and Channel Islands.		
1877.	1876.	1877.	1876.	1877.	1876.	
UNDER VARIOUS KINDS OF CROPS IN EACH YEAR.						
29·0	29·1	12·1	11·8	23·5	23·3	Corn crops (including beans and peas)
11·3	11·3	8·8	8·7	10·5	10·5	Green crops
1·9	2·1	0·1	0·1	1·3	1·4	Bare fallow
						Grass—
14·2	14·4	12·5	11·8	13·7	13·6	Clover, &c., under rotation
43·3	42·9	65·7	66·8	50·6	50·7	Permanent pasture
0·3	0·2	0·8	0·8	0·4	0·5	Other crops
100·0	100·0	100·0	100·0	100·0	100·0	Total
UNDER EACH KIND OF CORN CROP IN EACH YEAR.						
34·4	32·6	7·7	6·5	29·9	28·2	Wheat
26·2	27·6	12·2	12·0	23·9	24·9	Barley or bere
29·9	30·4	79·0	80·4	38·2	38·8	Oats
0·6	0·6	0·5	0·4	0·6	0·6	Rye
5·5	5·6	0·5	0·6	4·6	4·8	Beans
3·4	3·2	0·1	0·1	2·8	2·7	Peas
100·0	100·0	100·0	100·0	100·0	100·0	Total
UNDER EACH KIND OF GREEN CROP IN EACH YEAR.						
14·3	14·1	64·3	64·6	28·1	28·1	Potatoes
57·8	60·1	24·8	25·3	48·8	50·4	Turnips and swedes
10·0	9·7	3·6	3·6	8·2	8·0	Mangold
0·4	0·5	0·3	0·2	0·4	0·4	Carrots
5·1	5·0	3·5	3·0	4·6	4·5	Cabbages, kohl-rabi, and rape
12·3	10·6	3·5	3·3	9·9	8·6	Vetches, lucerne, and any other green crop, except clover or grass
100·0	100·0	100·0	100·0	100·0	100·0	Total
100 ACRES UNDER CROPS, FALLOW AND GRASS.						
4·4	4·4	3·2	3·0	4·0	4·0	Horses
18·0	18·5	25·9	26·2	20·6	21·1	Cattle
88·8	89·3	25·9	25·5	68·2	68·0	Sheep
7·9	7·3	9·5	9·1	8·4	7·9	Pigs

V.—*Notices of New Books.*

One of the most important of the recent additions to the library of the Statistical Society, is Dr. Georg Mayr's work, entitled *Die Gesetzmässigkeit im Gesellschaftsleben—Statistische Studien.* This able and interesting volume is intended as a popular exposition of the statistical method as applied to the phenomena of society. Dr. Mayr may be congratulated on the success with which he has accomplished the by no means easy task he has set himself to perform. In addition to a lucid style, and a power of grouping the details of his subject in the order most suitable for his purpose, he has a keen sense of what is and is not fitted for general comprehension. Had it been otherwise, no amount of learning and research would have saved the book from being a failure as a popular treatise on statistics. The subject is so difficult, and in the estimation of the majority so "dry," that the obstacles to its popularisation are extreme. Even among people of culture, there are many to whom the very name of "statistics" has a dreary sound, and whose repugnance to scientific inquiries based on "mere figures" is only enhanced by what little knowledge of the subject they may possess. No doubt a good deal of this prejudice arises from the want of a really good elementary treatise on statistics, which would give the ordinary intelligent Englishman the instruction and information he requires, on a subject which, if rightly understood, is of the highest importance as regards the State. An English handbook of the theory and practice of statistics, as clear and sound as the German volume before us, would greatly promote the study of the subject by persons whose co-operation might be very useful to scientific statists. Dr. Mayr more than once alludes to the difficulty of obtaining reliable information, arising from the ignorance and prejudice of the great mass of the community; and it is to be feared that what is said of Germany holds true also for this country. Those familiar with statistical inquiry will probably find little new information in Dr. Mayr's book, but they will certainly gain by reading it some valuable ideas both on the theoretical and on the practical parts of statistics. The work is divided into an introduction and three sections. In the introduction the author briefly discusses the relation of the statistical method to the physical sciences, and to social science, and points out the fallacy involved in the ordinary notion of the disparateness of nature and social life. In Section 1, he treats of the statistical method as applied to social phenomena; in Section 2 he explains and discusses the use of statistics of population; and in Section 3 he deals in a similar manner, but at less length, with statistics of morality. Here it may be remarked that Dr. Mayr would prefer to use the phrase "numerical method" instead of "statistical method," though he admits that it would be almost impossible to change the existing phraseology. Certainly it is desirable that the same word should not be used to denote both a method and a science, particularly as the method is employed more or less in several sciences.

But it seems to us that the real solution of this little difficulty of nomenclature, is to cease talking of a *science* of statistics altogether, and frankly admit that the statistical method is a method, and nothing more. The fact that it is the *only* method possible in sociology does not give it any claim to be considered a science. If we are to go on speaking of the science of statistics, when we mean sociology, it would be as well to adopt Dr. Mayr's suggestion, and speak of the "numerical" and not the "statistical" methods of investigating phenomena.

Having expressed his dissatisfaction with the ordinary nomenclature, Dr. Mayr proceeds to give his definition of what he regards as *par excellence* the Statistic Science. He affirms it to be "the systematic co-ordination and explanation of actual events, and of the laws of man's social life that may be deduced from these, on the basis of the quantitative observation of aggregates of individuals;" which is as good a definition for ordinary purposes as is likely to be needed. It is interesting to turn to the definition given by Quetelet, and compare it with Dr. Mayr's. In the view taken by the distinguished Belgian *savant*, we can plainly trace the effect of the earlier conception of statistics, as supplying a sort of inventory of the chief components *of a State*. Dr. Mayr remarks, that, in his own definition, there is nothing about a State at all; and he goes on to say that though this omission is strictly correct, yet statistics and the State necessarily have a great deal in common, and can render one another inestimable services. The statist certainly would be all but helpless, were it not for the materials supplied to him by the results of official investigations, often, indeed, until of late years, always carried out for some other reason than the furtherance of statistics. Dr. Mayr remarks that the modes of conducting an inquiry for administrative purposes, are not those best suited for the requirements of statists, and especially that the boundaries of States are not fixed with reference to those geographical considerations which necessarily guide statistical inquirers. On the other hand, that the statists can be of great use to the statesman is obvious. For not only is the latter in need of a correct interpretation of the mass of facts he obtains, but the statist can suggest valuable improvements in the mode of collecting these facts. Dr. Mayr lays great stress on the importance of keeping distinct the operations of collecting the single facts, and of uniting them to form tables of statistics. Even at the present time, he remarks, statistics of industry are collected in Germany without proper attention to this maxim, and the consequence is that much of the existing statistical material regarding German industry is almost useless. Dr. Mayr divides the operations of statistical inquiry into three stages. First, observation; secondly, reckoning the numbers thus obtained and grouping them in the proper manner; thirdly, the scientific application of the materials thus produced, to the problems of social science. The remarks on the best method of performing the primary operation, contained in pp. 27—42, and pp. 99—113, are very valuable. How a census should be taken is a question which can only be answered by official statists such as Dr. Mayr, who can supplement their theoretical knowledge with the

results of long experience in the practical management of statistical inquiry.

As might be expected, Dr. Mayr takes the greater part of his examples from the statistics prepared by the bureau of which he is the director. Some of the facts he produces are remarkable, while in one or two cases a state of things is revealed which is not in harmony with opinions hitherto held. One of these is the great mortality of boys in their first year, which occurs in a great part of South Germany, particularly in Wurtemberg and Bavaria. The general opinion was that the excess of males over females was not reduced to zero until the twentieth year; but Dr. Mayr found that, in the above-mentioned districts, girls were actually in excess of boys by the end of the first year. The death-rate for children of both sexes is frightfully high in the locality in question, to a large extent on account of bad methods of rearing the newly-born, in Dr. Mayr's opinion. Why the conditions should be less favourable for boys than for girls is unknown. As another of Dr. Mayr's examples of statistics of mortality, we would call the reader's attention to the interesting though not entirely new, facts shown in the diagrams on pp. 285 and 289. The first of these shows the monthly death-rate of five countries simultaneously. The contrast between the course of the line denoting the death-rate of Norway with that of Italy is striking. In the former, August is the least deadly month, in the latter it is the most fatal. The lines of Bavaria and Belgium are, on the other hand, almost similar in all respects. The other table gives the death-rate in France of persons of different ages each month of the year. The first group consists of persons under one year old, the next of those from one to ten, the third from ten to thirty, and so on, to seventy years and upwards. The differences in the lines denoting the different ages is noteworthy. August is a very fatal month for the newly-born, while for the old, February is the most dangerous. Dr. Mayr has obtained some interesting information as to the birth-places of the inhabitants of the towns of Bavaria. Not half of the urban population of Bavaria are born in the towns in which they reside. The actual proportion of the native born to the whole population of an average Bavarian town is only 47 per cent. The figures for Munich are especially striking. There are in all Bavaria, only 90,072 persons who were born in the capital, and the population of Munich is 169,693. Dr. Mayr is of opinion that a further investigation of the phenomenon here mentioned is desirable, and thinks that steps should be taken for the same purpose in other countries. Another branch of statistical inquiry which requires attention, is that regarding what Dr. Mayr calls the "somatological" differences among populations, *i.e.*, differences of complexion, colour of eyes, hair, &c. Hitherto he has found the difficulty of obtaining reliable statistics on this subject very great. It seems that the modern German citizen has a mortal aversion to being classed as "dark complexioned," and his desire to believe himself a true child of the race whose ideal was the yellow-haired Siegfried, leads him to play tricks with the collectors of information on this delicate matter. Dr. Mayr especially records the simple answer of one

official, who evidently sympathised with the people of his district on the question. He returned an answer to the effect that in his district all the population "were of Caucasian race, and had white skins." Of course the best antidote for the state of mind which is here revealed, is the circulation of sounder ideas regarding the purpose for which statistics are collected.

When Quetelet commenced the masterly series of "letters" in which he set forth the nature and future destiny of statistics, he felt himself bound at the outset to defend his newly-formulated science from the assaults of the believers in free will. Though the course of the philosophic war has recently been to all appearance unfavourable to the orthodox doctrine, Dr. Mayr has taken pains to show that the admitted facts of statistical inquiry are not necessarily in contradiction with the existence of free will. We must refer the reader to pp. 349—355 for Dr. Mayr's masterly exposition of the relations of statistics to the Libertarian dogma. His view is briefly, that free will is a real but relatively small force, acting within limits which though real are not well defined. To students of the history of statistics, Dr. Mayr's account of Johann Peter Süssmilch will be very interesting. Süssmilch lived about the middle of last century, and certainly showed great aptitude for statistical inquiry, especially if we take into account the very meagre materials on which he had to work. Whether he was the equal of Quetelet, as Dr. Mayr would seem to imply (p. 221), is a question that there is no advantage in raising, still less in answering. That Süssmilch's claims to be considered as a "worthy pioneer" in the new country over which Quetelet carried a rough but comprehensive survey, have been neglected, may be true; but in all departments of human activity the man who works out a conception and makes it available for practical purposes, must be considered as the originator of such consequences as arise from it. Though Süssmilch may be the Kepler, Quetelet is the Newton, of statistics.

[Since this notice was written the Council of the Statistical Society has decided to prepare and circulate a translated abridgment of Dr. Mayr's book, which it is hoped will be ready as a supplement to the next number of the *Journal*.]

We have next to notice "Recherches sur la loi du Mouvement Télégraphique International. Par C. L. Madsen, avec 10 tableaux et une carte. Copenhague, Paris, 1877." This essay on the statistics of international telegraphy is in many respects a notable effort in statistical science. The author, Herr Madsen, has had a large part in the management of the Grande Compagnie des Télégraphiques du Nord, but he appears to be, at the same time, a man of a very mathematical turn of mind. Accordingly, he has taken the statistics of telegraphic communication between Denmark, Norway, and Sweden, and the rest of the world, and has endeavoured to discover the mathematical laws which the amounts obey. He arrives at an empirical equation in which the number of telegrams is expressed in the form of a variable co-efficient, multiplied into the sum of three terms. Two of these terms consist of the tonnages of shipping, belonging to either of the

countries telegraphically united, but navigating between the other country and the rest of the world. The third term, however, is the most important, and consists of the square root of the value of the direct commerce between the two countries, multiplied by the square root of the tonnage of the ships plying, whether with cargo or in ballast, directly between the countries. It is only the commercial traffic which is taken into account; telegrams relating to domestic affairs are of comparatively inconsiderable amount. The variable co-efficient is, however, a very important quantity: it partly depends upon the telegraphic progress of a country, that is, apparently, the habit which has been acquired of using the telegraph. But it also varies inversely as the commercial distance between the countries considered. The author has shown great ingenuity in defining and investigating what he calls the commercial centres of gravity of countries, the distances between which represent their commercial distances. Another important quantity is the commercial unit, that is the average value of the goods dealt with in each transaction. One telegram will order goods to the extent of 10,000*l.* as easily as to the value of 100*l.* The same amount of commerce will therefore work the telegraphs more as the commercial unit is less. It is finally shown that the habit of using the telegraph increases in a geometric series depending on the lapse of time. All this theory applies only to international traffic, inland telegrams following wholly different laws, as Sir James Anderson had previously pointed out in his statistics of telegraphy.

There can be no doubt about the highly ingenious and scientific manner in which Herr Madsen has approached the problem. The chief objection to be made to his work is that the statistics of four years' traffic merely between the Scandinavian kingdoms and the rest of the world seem to form a somewhat narrow basis on which to rear so elaborate a mathematical theory. Long and careful study would be requisite before any one could pretend to judge the success of Herr Madsen in discovering the exact form of the laws; but there can hardly be any doubt that the essay is a model of the manner in which statistical questions must be approached sooner or later. It is probable, too, that those who are engaged in designing or speculating in telegraphic cable companies might derive very useful hints from the thorough analysis of the causes of telegraphic traffic which this essay contains. There are very few men who combine business experience with the mathematical power shown in this essay, of which we have been able to give a mere *aperçu*, leaving those interested in the subject of telegraphy or of statistical method to study the work itself in detail.

Another book on our list is a volume "On Chinese Currency, Coin, and Paper Money. By W. Vissering, Leiden (E. J. Brill), 1877." Now that we are in possession of the banking accounts of a Babylonian firm, it is time that we became better acquainted with the long history of money in China. Dr. Vissering, son of the professor of Political Economy in the University of Leiden, presents us with the present elaborate work upon the subject,

written in English. It chiefly consists of the celebrated treatise "The Examination of Currency" of the Chinese scholar *Ma-twan-lin*, contained in the eighth and ninth volumes of his great cyclopædia. This early economist was born in the Kiang-si province of China, probably about the year 1245, when the social condition of China was rendered miserable by the over-issue of paper money. After holding public offices of importance, he devoted the last twenty years of his life to scientific studies, and collected his history of money from annals of the different dynasties which were even then ancient. Dr. Vissering gives the text in Chinese characters, a careful translation into English, and elaborate commentaries. Thus the European reader is for the first time enabled to study the experience of a thousand and more years back in the great empire of China. We have, for instance, the speeches delivered at a privy council of the Emperor Hiao-wu-ti, of the Sung dynasty, some years after A.D. 430. One of the speeches, as Dr. Vissering points out (p. 74), displays a perfect comprehension of Gresham's theorem, that bad money cannot drive out good money. A little later (p. 80) we have a complete statement of the important principle that false coining can only be prevented by excellent mechanical execution of the coinage, and not by penal laws. In the reign of Kao-ti, of the Tsi Dynasty, Kung-K'Ai spoke as follows:—"The fact that false coiners are not restrained by severe laws, results from the way in which the money is cast on the part of Government, which is too sparing of the copper, and grudges the expenses consequent upon the mechanical process. They who act up to such principles have a notion of money without heeding its character as an instrument in daily use to further exchange. Their purposes and desires are merely to make the pieces light and as numerous as possible. They take care that the mechanical process is as simple as possible, and the fabrication of the pieces easy; but they do not consider what are the fatal consequences of it."

It is difficult to give any correct idea of the amount of curious information contained in this volume. Not only the metallic but the paper money, which circulated for many centuries, is carefully described. We have frequent statistical returns of the notes issued and withdrawn, and of the rates of depreciation at which they circulated. Much of Ma-twan-lin's text reads (that is in English) just like telegraphic reports of the currency manipulations at Washington. Thus, about the year A.D. 1168, Tsiang-fei reports:—"During the last month the hoei-tsze which were in use have been withdrawn and redeemed with gold and silver. Now the same course must be pursued, and if the number of hoei-tsze issued gradually increases, gold and silver must continually be given to withdraw them." The minister proceeds:—"The means to prevent depreciation is now to collect them together and then again to expand them . . . . and in this way always to balance them that they may remain at full value. Now, if on the first day of the fourth month of this year workpeople are appointed to print and coin them, an amount of 10 millions string, may be ready at the end of this year. When at that time the exchange of the old hoei-tsze begins, on every bill

which is exchanged a premium of 20 cash shall be exchanged." We learn on p. 212, that these hoei-tsze were originally intended to act, not as common money, but rather as receipts for tea, salt, aromatics, and other Government productions, in the manner of dock warrants.

In pp. 197, &c., we have an account of the early Tartar currency, which was borrowed from China. The whole volume is a mine of novel statistical and economical information; it contains moreover facsimiles of ancient and modern Chinese paper money, and a learned introductory chapter. Dr. Vissering's English is good, but not perfect; let him who would criticise it, find an English scholar to translate another volume of Ma-twan-lin's cyclopædia into Dutch! Economists owe a deep debt of gratitude to the tedious and indefatigable labours of Dr. Vissering.

There has now been added to the library the last fifteen volumes of "A Statistical Account of Bengal," by W. W. Hunter, B.A., LL.D., an elaborate work in twenty volumes, published by command of the Government of India. It would be beyond our province to attempt any description of this important work, to which we can only direct the attention of members of the Society, especially those connected with India. We take the opportunity of adding that the publication of the work in this country has been arranged through Messrs. Trübner, who offer it for sale at the nominal price of 5*s.* per volume, coupled with the intimation that only a very limited number of copies are for sale.

Among other new works also added to the library, we have to notice a translation by Mr. Heywood, late President of the Society, of Professor Heer's "Primeval World of Switzerland." The work is in two volumes, and contains no fewer than 560 illustrations, so that nothing is wanted to make the work a complete record of the subject to which it relates. The translation and execution of the translations leave nothing to be desired, while the value of the translation is enhanced by the editor's notes. There have also been received, as will be noticed in the usual list, Mr. Giffen's essay on "Stock Exchange Securities;" a short essay by Dr. Mayr, "Ueber die Kindersterblichkeit in München;" and many others.

Of works of reference we are glad to notice an attempt to increase the information of the public as to our local governments, in the shape of a "Municipal Corporations Directory and Year Book," edited by Mr. J. R. Somers Vine. The Directory appears to contain a good deal of statistical and other information in regard to each municipality, and could be usefully enlarged in a future edition.

The quarter is not one in which there are many parliamentary publications. Most of those belonging to the past session are issued in the September quarter, so that very few remain to the last quarter of the financial year. We have to notice, however, the Agricultural Returns for Great Britain, issued by the Board of Trade, of which, according to usual practice, we have given a

summary in another part of this *Journal*. The form of the returns has been slightly altered in the present publication, and the report states that the information as to foreign and colonial agriculture formerly incorporated with these returns, will henceforth be given in the statistical abstracts relating to foreign countries and to the colonies respectively published by the Board of Trade. We have also to notice the last Annual Report of the Local Government Board, for the year 1875-76, containing the usual tables. The principal topic of the report is the progress lately made in restricting out-door relief throughout the country, which has had for effect a great diminution of pauperism. The other Parliamentary publications received during the quarter, comprise the Statistical Abstract for the Colonies issued by the Board of Trade, the monthly Trade and Navigation Returns, and the Statistical Abstract for India issued by the India Office, to which latter publication important additions have been made, especially as regards the population of India.

We have left ourselves little room to notice the various official publications issued by the Statistical Bureaux of Foreign States, which have again been most important. Italy again is the largest contributor, and we would direct attention especially to the "Statistica Finanziaria—Prospetti e Tavole Grafiche"—a volume of financial statistics, for each tax, and each province of Italy, which is perhaps unequalled for fulness among the official publications of any State. The "Bolletino Consolare" is also an interesting document; this publication by the Italian Government rivalling in some respects the well-known reports by Consuls and Secretaries of Legation issued by our own Foreign Office. We can hardly hope to do justice, however, to the merits of Italian statistics in this brief form, and we must again express the wish that some of the members of the Society will make use of them and attempt to give an account of them. The United States, Germany, Austria, Sweden and Norway, have also sent numerous publications, mostly in continuation of former issues, and the importance and value of which are sufficiently apparent from the alphabetical list which follows.

In conclusion, we have to mention the fact of the publication by M. Block of a "Traité Théorique et Pratique de Statistique," which appears to go over the whole ground, and contains a long account of the history of statistics. We have received this volume too late to give any notice of it. It differs in method from that of Dr. Mayr above analysed, and the two works will rather supplement than compete with each other. It may be hoped that the study of statistics will be not a little promoted by the issue of two such works.

ADDITIONS TO THE LIBRARY DURING THE QUARTER ENDED 31st DECEMBER, 1877.

Donations.	By whom Presented.
Austria—	
Statistisches Jahrbuch, 1874, Heft x;—1875, Heft vi;—8vo. Wien, 1877	K. K. Statistischen Central Commission
Statistische Monatschrift, III Jahrgang. Heft xi, roy. 8vo. Wien, 1877	,,
Belgium. Statistique Médicale de l'Armée Belge, 1870-74. 271 pp., 4to. Bruxelles, 1877. (2 copies)	The Belgian Government
China. Reports on Trade at the Treaty Ports, 1875, with Appendix. 288, 89 pp., 4to. Shanghai, 1877	The Inspector-Gen. of Chinese Maritime Customs
France—	
Compte Général de l'Administration de la Justice Civile et Commerciale en France pendant l'année 1875. 195 pp., 4to. Paris, 1877	Le Ministre de la Justice
Compte Général de l'Administration de la Justice Criminelle en France pendant l'année 1875. 231 pp., 4to. Paris, 1877	,,
L'Economiste Français. (Current numbers)	The Editor
Revue Bibliographique Universelle	,,
Partie Litteraire. Vol. xx, Nos. 4, 5 and 6. Partie Technique. Vol. xxi, Nos. 10 and 11.	
Société de Statistique de Paris. Journal de la. Vol. xviii, Nos. 10, 11 and 12	La Société
Statistique Annuelle de la France. Nouvelle Serie. Tome iv, année 1874. 442 pp., imp. 4to. Paris, 1877	The French Government
Germany—	
Frankfurt a. M. Jahresbericht über die Verwaltung des Medicinalwesens der Stadt, für das Jahr 1876. 300 pp., 8vo. Frankfurt, 1877	Bureau der Stadt Frankfurt a. M.
Frankfurt a. M. Statistische Mittheilungen über den Civilstand der Stadt im Jahre 1876. 19 pp., 4to. Frankfurt, 1877	Frankfurter Verein für Geographie und Statistik
Die Bevölkerung der Erde. Herausgegeben von E. Behm und H. Wagner, iv. 120 pp., 2 Karten, 4to. Gotha, 1877	Prof. H. Wagner
Monatshefte zur Statistik des Deutschen Reichs, 1877. Band 25. Hefte 8, 9 und 10. 4to. Berlin, 1877	Kaiserlichen Statistischen Amt. Berlin
Nachtrag pro 1876 zu der Statistik der Mortalitäts-, Invaliditäts-, und Morbilitätsverhältnisse, bei dem Beamten-Personal der Deutschen Eisenbahn Verwaltungen. 24 pp., 8vo. Berlin, 1877	G. Behm
Hungary—	
Buda-Pesth. Die Sterblichkeit der Stadt Budapest in den Jahren 1874 und 1875, und deren Ursachen. Von J. Korosi. 150 pp., 4to. Budapest, 1877	Le Bureau Communal de Statistique
Ditto. Untersuchungen über die Einkommen- und Hauszinssteuer für Budapest in den Jahren 1873 und 1874. Von J. Korosi. 57 pp., 4to. Budapest, 1877	,,

Donations—Contd.

Donations.	By whom Presented.
HUNGARY—*Contd.*	
Das Ungarische Unterrichtswesen, 1875. 467 pp., 4to. Budapest, 1877	Kön. Ung. Ministers für Kultus und Unterricht
Statistica dei viaggi (1876) dai Bastimenti Ungarici a Lungo Corso. 37 pp., 4to. Fiume, 1877	Regio Governo Marittimo Ungherese
Statistisches Jahrbuch für Ungarn. v. Jahrgang. 4 Heft, 4to. Budapest, 1877	Kön. Ung. Statistischen Bureau
ITALY—	
Annali del Ministero, anno 1877. I. Semestre, No. 88. 404 pp., diagrams. 8vo. Roma, 1877. 2 copies	Ministero di Agricoltura, Industria, e Commercio
Archivio di Statistica. Anno ii. Fasc. 1. 151 pp., map. 8vo. Roma, 1877	Signor Luigi Bodio
Bollettino Bimestrale delle Situazioni dei Conti e del movemento dei depositi delle casse di Risparmio. Anno 2. No. 4. Imp. 8vo. Roma, 1877	Ministero di Agricoltura, Industria, e Commercio
Bollettino Mensile delle Situazioni dei Conti, delle Banche popolari e instituti di credito. Anno 8, 1877. No. 4.	,,
Bollettino Consolare. Vols. iii-xii. 8vo. 1866-76. Vol. xiii, Fasc. iv, v, 1877	Signor Luigi Bodio
Bollettino delle Situazoni Mensili dei Conti degli Instituti d'Emissione. Anno 8. Nos. 8, 9 e 10. Imp. 8vo. Roma, 1877	,,
Bollettino Settimanale dei Prezzi di Alcuni dei principali Prodotti Agrari. Anno 1877. Nos. 30 al 44. Imp. 8vo. Roma, 1877.	Ministero di Agricoltura, Industria, e Commercio
Camera dei Deputati. No. 18. Relazione della Commissione centrale di Sindicato sulla Amministrazione dell' asse Ecclesiastico per l'anno 1876. 241 pp., roy. 4to. Roma, 1877	,,
Finanze. Annuario del Ministero delle Finanze del Regno, 1867 al 1873 (compreso). 8 vols., 8vo. Roma, 1867-73	Direttore della Statistica Generale
Giustizia. Relazione Statistica Sulla Amministrazione della Giustizia. Affari Civili e Commerciali. Per l'anno 1872. 119 pp., imp. 4to. Roma, 1875.	,,
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Professor W. Stanley Jevons, M.A., LL.D., F.R.S.

Foreign Secretary.

Frederic J. Mouat, M.D., F.R.C.S.

Assistant Secretary.—Joseph Whittall.

Bankers.—Messrs. Drummond and Co., Charing Cross, S.W., London.

AN OUTLINE OF

THE OBJECTS OF THE STATISTICAL SOCIETY.

THE *Statistical Society* of London was founded, in pursuance of a recommendation of the British Association for the Advancement of Science, on the 15th of March, 1834; its object being, the careful collection, arrangement, discussion and publication, of all facts bearing on and illustrating the complex relations of modern society in its social, economical, and political aspects,—especially facts which can be stated numerically and arranged in tables;—and also, to form a Statistical Library as rapidly as its funds would permit.

The Society now possesses a valuable library and a reading room; ordinary meetings, are held monthly from November to June, which are well attended, and cultivate among its Fellows an active spirit of investigation: the papers read before the Society, with an abstract of the discussions thereon, are published in its Journal, which now consists of 40 annual volumes, and forms of itself a valuable library of reference.

The Society has originated and statistically conducted many special inquiries on subjects of economic or social interest, of which the results have been published in the *Journal* (which has a very wide circulation), or issued separately; the latest instance being the institution of the "Howard Medal" Prize Essay.

To enable the Society to extend its sphere of useful activity, and accomplish in a yet greater degree the various ends indicated, an increase in its numbers and revenue is desirable. With the desired increase in the number of Fellows, the Society will be enabled to publish standard works on Economic Science and Statistics, especially such as are out of print or scarce, and also greatly extend its collection of Foreign works. Such a well-arranged Library for reference, as would result, does not at present exist in England, and is obviously a great *desideratum*.

The Society is cosmopolitan, and consists of Fellows and Honorary Members, forming together a body, at the present time, of nearly *eight hundred* Members; the principal States of Europe and America, British India, and the Crown Colonies being represented by "Honorary Members."

The Annual Subscription to the Society is *Two Guineas*, and at present there is no entrance fee. Fellows may, on joining the Society, or afterwards, compound for all future subscriptions upon the payment of *Twenty Guineas*.

The Fellows of the Society receive gratuitously a copy of each part of the *Journal* as published Quarterly, and have the privilege of purchasing back numbers at a reduced rate. The Library (reference and circulating), and the Reading Room, are open daily, for the convenience of Members.

Nomination Forms and any further information will be furnished, on application to the Assistant Secretary.

CALENDAR FOR SESSION 1877-78.

1877	MON.	TUES.	WED.	THURS.	FRI.	SATUR.	SUN.
NOV.	...	...	...	1	2	3	4
	5	6	7	8	9	10	11
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	19	**20**	21	22	23	24	25
	26	27	28	29	30	...	...
DEC.	...	...	...	...	...	1	2
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	17	**18**	19	20	21	22	23
	24	25	26	27	28	29	30
	31	...	...	...	...	...	...
1878							
JAN.	...	1	2	3	4	5	6
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	28	29	30	31	...	...	...
FEB.	...	...	...	...	1	2	3
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MAR.	...	...	...	...	1	2	3
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	18	**19**	20	21	22	23	24
	25	26	27	28	29	30	31
APR.	1	2	3	4	5	6	7
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	15	**16**	17	18	19	20	21
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1878	MON.	TUES.	WED.	THURS.	FRI.	SATUR.	SUN.
MAY	...	...	1	2	3	4	5
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JUNE	...	...	...	...	...	1	2
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JULY	1	2	3	4	5	6	7
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AUG.	...	...	...	1	2	3	4
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SEP.	...	...	...	...	...	...	1
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OCT.	...	1	2	3	4	5	6
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Ordinary Meetings, at which Papers will be read, will be held on the Tuesday Evenings marked in Black Figures.

The Chair will be taken at 7.45 o'clock p.m., precisely.

Visitors may attend the Ordinary Meetings on the introduction of a Fellow.

THE ANNIVERSARY MEETING

Will be Held on the 25th June, 1878, at 3 p.m.

MONTHLY MEETINGS—Session 1877–78.

Third Tuesday in the Months of November—June.

Tuesday,	Nov.	20.	Tuesday,	March	19.
,,	Dec.	18.	,,	April	16.
,,	Jan.	15.	,,	May	21.
,,	Feb.	19.	,,	June	18.

The Council have reason to expect that in the course of the Session the following Papers will, among others, be communicated to the Society :—

The President's Inaugural Address.

"Second and Final Report on the Ninth International Statistical Congress held at Budapest, in September, 1876." By Dr. F. J. Mouat, F.R.C.S.

"What are the conditions on which the commercial and manufacturing supremacy of Great Britain depends, and is there any reason to think they have been or may be endangered?" By A. J. Mundella, Esq., M.P.

"Methods of Electing Representatives." By Henry Richmond Droop, Esq.

"The Mineral Statistics of the United Kingdom." By W. F. Howard, Esq., C.E.

"The Famines of the World." By Cornelius Walford, Esq., F.I.A., F.S.S.

"Remarks on Diagrams relating to the Banks of England, Austria, Belgium, France, Germany, Holland, and Russia." By Ernest Seyd, Esq., F.S.S.

"Foreign Debts." By Hyde Clarke, Esq., D.C.L., &c.

"Statistics of Owens' College, Manchester." By James Heywood, Esq., F.R.S.

"Recent Accumulations of Capital in the United Kingdom." By Robert Giffen, Esq.

"Banking Statistics." By R. H. I. Palgrave, Esq.

"The Position and Prospects of the Statistical Section of the British Association." By Professor W. Stanley Jevons, M.A., LL.D., F.R.S.

"False Methods in Medical Statistics, with especial reference to recent conspicuous examples." By Dr. J. M. Granville, M.R.C.S., &c.

"On the Geographical Distribution of the Celtic-speaking population of the British Isles." By E. G. Ravenstein, Esq., F.R.G.S.

"On Tabular Analysis." By Dr. Wm. A. Guy, M.B., F.R.C.P., V.P.R.S.

HOWARD MEDAL.

The following is the title of the Essay to which the Medal will be awarded in November, 1878. The Essays to be sent in on or before 30th June, 1878.

"*The Effects of Health and Disease on Military and Naval Operations.*"

The Council have decided to grant the sum of £20 to the writer who may gain the "Howard Medal" in November, 1878.

(*The Medal is of bronze, having on one side a portrait of John Howard, on the other a wheatsheaf, with suitable inscription.*)

The following are the principal conditions:—

Each Essay to bear a motto, and be accompanied by a sealed letter, marked with the like motto, and containing the name and address of the author; such letter not to be opened, except in the case of the successful Essay.

No Essay to exceed in length 150 pages (8vo.) of the *Journal of the Statistical Society.*

The Council shall, if they see fit, cause the successful Essay, or an abridgment thereof, to be read at a Meeting of the Statistical Society; and shall have the right of publishing the Essay in their *Journal* one month before its appearance in any separate independent form; this right of publication to continue till three months after the award of the Prize.

The President shall place the Medal in the hands of the successful Candidate, at the conclusion of his Annual Address, at the ordinary Meeting in November, when he shall also re-announce the subject of the Prize Essay for the following year.

Competition for this Medal shall not be limited to the Fellows of the Statistical Society, but shall be open to any competitor, providing the Essay be written in the English language.

The Council shall not award the Prize, except to the author of an Essay, in their opinion, of a sufficient standard of merit; no Essay shall be deemed to be of sufficient merit that does not set forth the facts with which it deals, in part, at least, in the language of figures and tables; and distinct references should be made to such authorities as may be quoted or referred to.

Further particulars or explanations may be obtained from the Assistant Secretary, at the Office of the Society, King's College Entrance, Strand, W.C., London.

LIST OF THE FORMER

Patron and Presidents

OF THE

STATISTICAL SOCIETY,

From its Foundation, on 15th March, 1834.

PATRON.

Period.	
1840–61	His Royal Highness The Prince Consort, K.G.

PRESIDENTS.

1834–36	The Most Noble the Marquis of Lansdowne, F.R.S.
1836–38	Sir Charles Lemon, Bart., M.P., F.R.S., LL.D.
1838–40	The Right Hon. the Earl Fitzwilliam, F.R.S.
1840–42	The Right Hon. Viscount Sandon, M.P. (now Earl of Harrowby.)
1842–43	The Most Noble the Marquis of Lansdowne, K.G., F.R.S.
1843–45	The Right Hon. Viscount Ashley, M.P. (now Earl of Shaftesbury.)
1845–47	The Right Hon. Lord Monteagle.
1847–49	The Right Hon. the Earl Fitzwilliam, F.R.S.
1849–51	The Right Hon. the Earl of Harrowby.
1851–53	The Right Hon. Lord Overstone.
1853–55	The Right Hon. Charles William Earl Fitzwilliam, K.G.
1855–57	The Right Hon. the Earl of Harrowby, F.R.S.
1857–59	Right Hon. Lord Stanley, M.P. (now Earl Derby.)
1859–61	Right Hon. Lord John Russell, M.P., F.R.S. (now Earl Russell.)
1861–63	Right Hon. Sir John S. Pakington, Bart., M.P., G.C.B. (now Lord Hampton.)
1863–65	Colonel W. H. Sykes, M.P., F.R.S.
1865–67	The Right Hon. Lord Houghton.
1867–69	Right Hon. W. E. Gladstone, M.P., D.C.L.
1869–71	William Newmarch, Esq., F.R.S.
1871–73	William Farr, Esq., M.D., D.C.L., F.R.S.
1873–75	William A. Guy, Esq., M.D., F.R.S.
1875–77	James Heywood, Esq., F.R.S.

LIST OF FELLOWS.

*Those marked thus * have compounded for their Annual Subscription*

The names of Members of Council are printed in SMALL CAPITALS.

Year of Election.	
1876	Abell, George Edmund, *Worcester City and County Bank, Worcester.*
1876	Abrahams, Israel, F.R.G.S., 56, *Russell-square, W.C.*
1870	Absolon, Eugene, 24, *Royal Avenue, King's-road, Chelsea, S.W.*
1862	Acland, Henry Wentworth, M.D., F.R.S., *Oxford.*
1869	Acland, Sir Thomas Dyke, Bart., M.P., F.R.S., *Sprydoncote, Exeter; and Athenæum Club, S.W*
1861	Adams, Arthur Robarts, D.C.L., *St. John's College, Oxford.*
1876	Adams, Josiah Oake, F.R.C.S., *Brooke House, Clapton, E.*
1867	Addison, John, 6, *Delahay-street, Great George-street, S.W.*
1873	*Airlie, The Right Hon. the Earl of, K.T., *Airlie Lodge, Camden Hill, W.*
1877	Airey, Hubert, M.D., *Edensor, Kidbrook-grove, Blackheath, S.E.*
1876	Aitchison, William John, 2, *Princes-street, E.C.*
1841	Aldam, William, F.R.S., *Frickley Hall, Doncaster.*
1872	Aldridge, James, 3, *Queen's-terrace, Southampton.*
1876	Aldwinckle, Thomas Williams, 7, *East India-avenue, Leadenhall-street, E.C.*
1847	Alexander, George William, 9, *Birchin-lane, E.C.*
1872	Alexander, Robert Henry, 9, *Birchin-lane, E.C.*
1876	Allen, John T. R., *North Bailey, Durham.*

Year of Election.	
1875	Allen, Joseph, 37, *Old Jewry, E.C.*
1877	Allen, Joseph, (*Deputy Town Clerk*), *Halifax.*
1871	Allport, James Joseph, *Littleover, near Derby.*
1877	Althaus, Julius, M.D., 18, *Bryanston-street, Portman-square, W.*
1871	Anderson, Sir James, F.R.G.S., F.G.S., 66, *Old Broad-street, E.C.*
1871	Angus, R. B., *Montreal, Canada.*
1834	*Ansell, Charles, F.R.S., 92, *Cheapside, E.C.*
1872	*Archibald, W. F. A., M.A., 3, *Amersham-road, Putney, S.W.*
1874	Arlidge, John Thomas, M.D., F.R.C.P., *Newcastle, Staffordshire.*
1873	Artingstall, George, F.R.G.S., *Latchford House, Warrington.*
1876	Ashby, Alfred, M.B., F.R.C.S., *Vine House, Grantham, Lincolnshire.*
1874	Ashwell, The Rev Canon, M.A., *Chichester.*
1854	Ashworth, Henry, *The Oaks, Bolton, Lancashire.*
1871	Atkinson, George W., 1, *Regent-street, Barnsley.*
1870	Avery, Thomas, *Church-road, Edgbaston, Birmingham.*
1871	Axon, William E. A., *Bank Cottage, Patricroft, Manchester.*
1872	*Babbage, Major-General Henry P., *Dainton House, Bromley, Kent.*
1872	*Backhouse, Edmund, M.P., *Middleton Lodge, Richmond, York.; Reform Club, S.W.*
1875	Baddeley, Samuel, *Freeland's road, Bromley, Kent.*
1873	Badenoch, The Rev. Dr. G. R., LL.D., 3, *Pagoda Villas, Lee, S.E.*
1855	Bailey, Arthur Hutcheson, F.I.A., 7, *Royal Exchange, E.C.*
1873	Bain, William P., M.D., 15, *Brunswick-street, Blackwall, E.*
1858	Baines, Edward, *St. Ann's-hill, Burley, Leeds.*

Year of Election.	
1848	Balfour, General Sir George, M.P., D.L., K.C.B., 6, *Cleveland-gardens, Bayswater, W.*
1873	Balfour, Jabez Spencer, 20, *Budge-row, Cannon-street, E.C.*
1865	Balfour, Thomas Graham, M.D., F.R.S., *Coombe Lodge, Wimbledon Park, S.W.*
1849	Bampton, James, 13, *St. James's-square, S.W.*
1877	Barbour, William B., *Devonshire Club, St. James's-street, S.W.*
1875	Barclay, Thomas, Ph.D., 22, *Rue Vivienne, Paris.*
1873	Barham, Francis F., *Bank of England, Birmingham.*
1877	Barton, Edwin W., L.R.C.P., *Gomersal, Leeds.*
1872	*Bass, Michael Arthur, M.P., 101, *Eaton-square, S.W.; Rangemore, Burton-on-Trent.*
1836	Bass, Michael Thomas, M.P., 101, *Eaton-square, S.W.; Rangemore, Burton-on-Trent.*
1873	Bate, George, 183, *Essex-road, Islington, N.*
1877	Bateman, A. E., 1, *Whitehall, S.W.*
1877	Battye, Richard Fawcett, M.R C.P., 123, *St. George's-road, S.W.*
1876	Baxter, Robert, 5 *and* 6, *Victoria-street, Westminster, S.W.*
1877	Bayfield, Arthur, 32, *Temple-row, Birmingham.*
1873	*Baynes, Alfred Henry, F.R.G.S., 19, *Castle-street, Holborn, E.C.*
1871	*Baynes, William Wilberforce, F.I.A., 32, *Moorgate-street, E.C.*
1877	Beadel, William J., *Springfield Lyons, Chelmsford.*
1875	*Beardsall, Francis E. M., 64, *Cross-street, Manchester.*
1875	*Beaufort, William Morris, F.R.A.S., F.R.G.S., &c., *Athenæum Club, Pall Mall, S.W.*
1873	Beaumont, Wentworth Blackett, M.P., F.R.G.S., 144, *Piccadilly, W.*
1863	Beddoe, John, M.D., 2, *Lansdowne-place, Clifton.*
1872	*Bedford, His Grace, the Duke of, *Woburn Abbey, Oakley, Bedford.*
1871	*Beer, Julius Paul, 56, *Portland-place, W.*
1834	Belper, The Right Honourable Lord, P.C., F.R.S., 75, *Eaton-square, S.W.*

Year of Election.	
1856	*Beresford-Hope, Alexander James Beresford, M.P., D.C.L., 1, *Connaught-place, W.*
1875	Bevan, Thomas, J.P., *Stone Park, near Dartford, Kent.*
1869	*Beverley, Henry, 27, *Theatre-road, Calcutta.*
1866	Bikélas, Démétrius, *Athens, Greece.*
1877	Bishop, George Houlton, M.R.C.S., *Female Lock Hospital, Harrow-road, W.*
1864	Blakely, Edward T., *Statistical Department, Board of Trade, S.W.*
1874	Blyth, James Nisbet, 28, *Highbury-place, N.*
1877	Boddy, Evan Marlett, L.R.C.P., 111, *Camberwell-road, S.E.*
1873	Bogie, James, 5, *Spence-street, Newington, Edinburgh.*
1860	Bohn, Henry George, F.R.A.S., F.L.S., 18, *Henrietta-street, Covent Garden, W.C.; Twickenham.*
1877	Bolam, Harry George, *Little Ingestre, Stafford.*
1875	Borthwick, The Right Hon. Lord, (*Vice-President*), *Saltrey House, St. Andrew's, N.B.;* 35, *Hertford-street, W.*
1871	Bourne, Stephen, *H.M. Custom House, E.C.; Headstone Drive, Harrow, W.*
1877	Boutcher, Emanuel, 12, *Oxford-square, Hyde Park, W.*
1860	Bovill, William John, Q.C., 32, *James-street, Buckingham-gate, S.W.*
1876	Bowen, Horace George, *Bank of England, Burlington-gardens, W.*
1874	Brabrook, Edward William, F.S.A., M.R.S.L., 28, *Abingdon-street, S.W.*
1875	Braby, James, J.P., *Maybanks, Rudgwick, Sussex.*
1874	Bramley-Moore, John, D.L., *Gerrard's-cross, Bucks.*
1855	Brand, The Right Hon. Henry Bouverie William, M.P., *Speaker's Court, House of Commons, S.W.*
1873	Brassey, Thomas, M.P., 4, *Great George-street, S.W.; and* 24, *Park-lane, W.*
1867	Bremner, John A., *Hilton House, Prestwich, Manchester.*
1873	Briggs, Thomas, *Homestead, Richmond, Surrey.*
1872	Brind, Frederick William, *Bickley, Kent.*
1876	Brodhurst, Bernard Edward, F.R.C.S., 20, *Grosvenor-street, Grosvenor-square, W.*

Year of Election.	
1873	Brogden, Alexander, M.P., 51, *Prince's Gate, S.W.*
1874	Broom, Andrew, 10, *Chancellor-road, West Dulwich, S.E.*
1872	Brown, James Bryce, F.R.G.S., 90, *Cannon-street, E.C.; and Bromley, Kent.*
1866	Brown, Thomas, jun., 65, *West Regent-street, Glasgow.*
1873	Browne, Edward W., *Sussex House, Knock, Belfast.*
1875	Browne, Thomas G. C., 13, *Elgin-road, Notting-hill, W.*
1873	Browning, Arthur Giraud, 3, *Victoria-street, Westminster, S.W.*
1876	Bruton, Leonard, *St. Stephen's Buildings, Bristol.*
1865	Bunce, John Thackray, "*Daily Post*" *Office, Birmingham.*
1873	*Burdett-Coutts, The Right Hon. the Baroness, 1, *Stratton-street, Piccadilly, W.; and Holly Lodge, Highgate, N.*
1863	Burnett, Alexander Smith, F.I.A., *Bridge Town, Barbados, West Indies.*
1872	Burns, The Rev. Dawson, M.A., 52, *Parliament-street, S.W.*
1874	Burr, William, 42, *Poultry, E.C.*
1877	Burrell, Alexander, 2, *Jermyn-street, S.W.*
1868	Burton, Samuel Warren,
1857	Caird, James, C.B., F.R.S., 3, *St. James's-square, S.W.; and Cassencarie, Kirkcudbrightshire.*
1874	Campbell, Sir George, K.C.S.I., M.P., D.C.L., 13, *Cornwall-gardens, South Kensington, S.W.*
1877	Campbell, George Lamb, *Market-street, Wigan.*
1862	Cape, George A., 8, *Old Jewry, E.C.*
1872	*Carillon, J. Wilson, F.S.A., F.R.G.S., &c., *Wormhill, Buxton.*
1871	Carnac, Harry Rivett-, *Calcutta, Bengal, India.*
1876	Carphin, James Rhind, C.A., 31, *George-street, Edinburgh.*
1877	Carter, E. Harold, 33, *Waterloo-street, Birmingham.*

Year of Election.	
1875	Carter, Frederick Hayne, 5, *St. Andrew-square, Edinburgh.*
1862	Carter, Henry Bonham, 11, *Lombard-street, E.C.*
1848	Carter, John Bonham, 25, *Ashley-place, Victoria-street, S.W.*
1858	Chadwick, David, M.P., *The Poplars, Herne Hill, Dulwich, S.E.*
1834	Chadwick, Edwin, C.B., *Park Cottage, East Sheen, Mortlake, S.W.*
1869	Chadwick, John Oldfield, F.R.G.S., 2, *Moorgate-street, E.C.*
1875	Challen, George Caleb, 37, *Old Jewry, E.C.*
1877	Chandler, George, 15, *Coleman-street, E.C.*
1873	Charlesworth, Frederic, *Widmore, Bromley, Kent.*
1863	Charlton, W. H., *Hesleyside, near Hexham, Northumberland.*
1873	Charrington, Thomas, *Mayfield, Chislehurst, Kent.*
1851	*Cheshire, Edward, 3, *Vanbrugh Park, Blackheath, S.E.*
1877	Child, Robert Carlisle, 8, *Belsize-park, N.W.*
1853	Chisholm, David, F.I.A., 64, *Princes-street, Edinburgh.*
1862	Christie, Richard Copley, M.A., 2, *St. James's-square, Manchester.*
1869	Chubb, Hammond, B.A., (*Secretary*), *Bickley, Kent.*
1877	Clapham, Crochley, L.R.C.P., *West Riding Asylum, Wakefield, Yorks.*
1856	Clark, Sir John Forbes, Bart., *Tillypronie, Tarland, Aberdeen.*
1849	Clark, Gordon Wyatt, *Mickleham Hall, near Dorking, Surrey.*
1877	*Clarke, Henry, L.R.C.P., *West Riding Prison, Wakefield, Yorks.*
1876	Clarke, Henry Harcourt Hyde, 32, *St. George's-square, S.W.*
1856	*Clarke, Hyde, 32, *St. George's-square, S.W.*
1871	Clarke, Ebenezer, jun., 52, *Cannon-street, E.C.*
1869	Cleghorn, John, 3, *Spring-gardens, S.W.*
1850	*Cleveland, His Grace the Duke of, K.G., 17, *St. James's-square, S.W.*

Year of Election.	
1853	Clirehugh, William Palin, F.I.A., 158, *Leadenhall-street, E.C.*
1877	Cobb, B. Francis, 2, *Royal Exchange Buildings, E.C.*
1873	Cockle, Captain George, F.R.G.S., 9, *Bolton-gardens, South Kensington, S.W.*
1877	Cohen, Lionel Louis . 9, *Hyde Park-Terrace, W.*
1838	Colebrooke, Sir Thomas Edward, Bart., M.P., 37, *South-street, W.*
1859	Coles, John, F.I.A., 39, *Throgmorton-street, E.C.*
1874	Collins, Eugene, M.P., 38, *Porchester-terrace, Hyde Park, W.*
1877	Collins, J. Wright, *Stanley, Falkland Islands.*
1874	Collinson, John, F.R.G.S., 37, *Porchester-terrace, Hyde Park, W.*
1867	Colman, Jeremiah James, M.P., *Carrow House, Norwich.*
1874	*Cookson, Faithful, Esq., F.R.G.S., *Teddington Hall, Middlesex.*
1843	*Copperthwaite, William Charles, *New Malton, Yorkshire.*
1874	Corbett, John, M.P., 6A, *Waterloo-place, Pall Mall, London, S.W.*
1873	Cork, Nathaniel, F.R.G.S., 39, *Lombard-street, E.C.*
1877	Corley, Thomas Groom, 34, *Cannon-street, E.C.*
1875	Cossham, Handel, F.G.S., *Weston Park, Bath; & Holly Lodge, St. George's, Bristol.*
1866	Cotton, Francis Lovett, *Baltic Chambers*, 108, *Bishopsgate-street Within, E.C.*
1874	Couch, The Rev Enos, M.A., F.R.G.S., 19, *Old Gravel-lane, E.*
1862	Courtney, Leonard Henry, M.A., M.P., 15, *Queen Anne's Gate, Westminster, S.W.*
1873	Cowper, The Hon. Henry Frederick, M.P., 4, *St. James's-square, S.W.*
1857	*Cowper-Temple, The Right Hon. William Francis, M.P., 15, *Great Stanhope-street, W.*
1874	Craigie, Captain Patrick George, *Hartley House, Lower Heath, Hampstead, N.W.*
1870	Craik, George Lillie, 29, *Bedford-street, Strand, W.C.*
1872	Crellin, Philip, 33, *Chancery-lane, W.C.*
1876	Crosse, John Burton St. Croix, F.R.C.S., *Royal Military Asylum, Chelsea, S.W.*

Year of Election.

1877 Crothers, Robert, M.D., M.R.C.P.,
2, Warrior-square-terrace, St. Leonard's-on-Sea.

1875 Crowe, William Russell,
Stanley House, Carshalton, Surrey.

1875 Cunningham, David, C.E.,
Work's Office, Harbour-chambers, Dundee.

1848 Cutcliffe, George, F.I.A.,
13, *St. James's-square, S.W.*

1873 Czarnikow, Cæsar,
Mitcham, Surrey.

1869 Dalyell, The Hon. Robert Anstruther,
Calcutta.

1873 Danvers, Juland,
India Office, Westminster, S.W.

1869 Davies, James Mair,
65, *West Regent-street, Glasgow.*

1874 Davies, William Henry,
51, *Tregunter-road, S.W.*

1855 *Dawbarn, William,
Elmswood Hall, Aigburth, Liverpool.

1873 Dawson, James Thomas,
2, *Royal Exchange-buildings, E.C.*

1876 Day, William Ansell,
Lyndhurst House, Hendon, N.W.

1873 Delahunty, James, M.P.
2, *Savile-row, W.*

1877 Deloitte, William Welch,
4, *Lothbury, E.C.*

1873 Dent, Clinton Thomas,
29, *Gresham-street, S.W.*

1873 Dent, Edward,
Fernacres, Fulmer, near Slough, Bucks.

1855 *Derby, The Right Honourable the Earl of, P.C., F.R.S.,
(*Honorary Vice-President*),
23, *St. James's-square; and Knowsley, Prescot, Lancashire.*

1877 Dever, Henry,
4, *Lothbury, E.C.*

1866 *Dilke, Sir Charles Wentworth, Bart., M.P., LL.M.,
76, *Sloane-street, S.W.*

1873 Dixon, George,
46, *Queen's-gate, S.W.*

1874 Dow, James Alexander,
15, *Templeton-road, Highbury Vale, N.*

1876 Dowden, Major Thomas Freeman, R.E.,
71, *Old Broad Street, E.C.* (Crawford, Colvin & Co.)

1877 Downs, Henry,
Manor House, Basingstoke.

Year of Election.	
1875	Doxsey, Rev. Isaac, *The Grove, Camberwell, S.E.*
1875	Drimmie, David, 41, *Lower Sackville-street, Dublin.*
1872	Droop, Henry Richmond, 1*a*, *New-square, Lincoln's-inn, W.C.*
1875	Dun, John, *Parr's Banking Company, Limited, Warrington.*
1870	Duncan, James, 9, *Mincing-lane, E.C.*
1875	Dyer, Captain Swinnerton Halliday, J.P., *Westcroft Lodge, Bagshot, Surrey.*
1836	Edmonds, Thomas Rowe, B.A., 72, *Portsdown-road, Maida-vale, W.*
1869	Edmonds, William, *Airedale Villa, Elm-grove, Southsea.*
1875	Edwards, Samuel, 4, *Eliot Park, Lewisham, S.E.*
1872	Elliot, Sir George, Bart., M.P., *Park-street, Park-lane, W.*
1842	Elliott, John Hawkins, 4, *Martin's-lane, City, E.C.*
1874	Elliot, Robert, M.D., F.R.C.P., 35, *Lowther-street, Carlisle.*
1877	Ellis, Arthur, 340, *Strand, W.C.*
1873	Ellissen, Adolf, 28, *Maida-hill West, W.*
1873	Elsey, John Green, J.P., *Morant House, Addison-road, Kensington, W.*
1873	Emanuel, Lewis, 36, *Finsbury-circus, E.C.*
1877	Emmott, W. T., 15, *Market-street, Manchester.*
1876	Evans, George H., M.D., 29, *Devonshire-street, Portland-place, W.*
1862	Evens, John Henry, 9, *Finsbury-place, E.C.*
1875	Everett, H. Sidney, M.A., *United States Embassy, Berlin.*
1834	Eversley, The Right Honourable Viscount, D.C.L., LL.D., 114, *Eaton-square, S.W.; and Winchfield, Hants.*
1867	Fairley, William, Ph.D., *Bloxwich, near Walsall, Staffordshire.*
1875	Faraday, Frederick J., 17, *Bazenose-street, Manchester.*

Year of Election

1874 Farmer, James,
6, *Porchester-gate, Hyde Park, W.*

1839 Farr, William, M.D., D.C.L., F.R.S.,
(*Honorary Vice-President*),
General Register Office; & Southlands, Bickley, Kent.

1868 Farrell, John Douglas,
Bank of England, West Branch, Burlington-gardens, W.

1876 Fearnside, Henry, M.B., F.R.C.P.,
9, *Ribblesdale-place, Preston, Lancaster.*

1877 Fearon, Frederick,
84, *Park-street, Grosvenor-square, W.*

1864 Fellows, Frank P.,
8, *The Green, Hampstead, N.W.*

1874 Ferguson, A.M.,
"*Ceylon Observer*" *Office, Colombo, Ceylon.*

1874 Ferguson, J.,
"*Ceylon Observer*" *Office, Colombo, Ceylon.*

1877 Ferrier, John,
Rosslyn House, New Barnet, Herts.

1834 Finch, John,
Heathside, Tunbridge Wells.

1873 Fisher, Henry,
38, *New Broad-street, E.C.*

1875 FitzGeorge, Owen,
21, *Cornhill, E.C.*

1865 FitzWilliam, William Shelford, F.R.G.S.,
12, *Gunter-grove, Chelsea, S.W.*

1875 Fordham, Edward King, J.P.,
Ashwell Bury, near Baldock, Herts.

1841 Fortescue, The Right Honourable Earl,
Castle Hill, South Molton, Devon.

1876 Forsyth, Sir Thomas Douglas, C.B., K.C.S.I.,
44, *Onslow-square, South Kensington, S.W.*

1871 Forwood, William Bower,
Ramlet, Blundellsands, Liverpool.

1877 Fothergill, The Rev. Ernest H., B.A.,
9, *Ashley-road, Essex-road, N.*

1877 Fowler, Robert Nicholas,
50, *Cornhill, E.C.; & Elm Grove, Corsham, Wilts.*

1868 Fowler, William,
33, *Cornhill, E.C.*

1873 Franklin, Jacob Abraham,
London Institution, Finsbury-circus, E.C.

1844 *Freeland, Humphrey William, J.P.,
Athenæum Club, S.W.; and Chichester.

1872 Freeman, Francis,
63, *Pall Mall, S.W.*

1876 Freeman, Joseph,
Harwater House, Loughton, Essex.

1876 Freeman, T. Kyffin,
Pinner Wood, Watford, Herts.

Year of Election.	
1875	Gair, Alexander, 34, *Cannon-street, E.C.*
1852	Galsworthy, Edwin Henry, J.P., F.I.A., 18, *Upper Wimpole-street, W.*
1873	*Galton, Capt. Douglas, R.E., C.B., F.R.S., 12, *Chester-street, Grosvenor-place, S.W*
1860	Galton, Francis, F.R.S., F.R.G.S., 42, *Rutland-gate, S.W.*
1872	Gastrell, Colonel J. E., (*care of H. J. Gastrell*), 36, *Lincoln's-inn-fields, W.C.*
1874	Gatliff, Charles, 8, *Finsbury-circus, London, E.C.*
1877	Gawith, Richard Jackson, M.R.C.S., 23, *Westbourne-park-terrace, Paddington, W.*
1872	Gibb, Thomas Eccleston, 16, *Lady Margaret-road, N.W.*
1874	Gibbs, Alban George Henry, *St. Dunstan's, Regent's-park, N.W.*
1871	Gibbs, George Sleight, *Darlington.*
1867	*Giffen, Robert, (*Secretary*), 44, *Pembroke-road, Kensington, W.*
1877	Gilbert, W. H. Sainsbury, *Wool Exchange, Coleman-street, E.C.*
1860	Glover, John, 22, *Great St. Helen's, Bishopsgate-street, E.C.*
1877	Goddard, Frederick Robertson, 19, *Victoria-square, Newcastle-on-Tyne.*
1850	Goldsmid, Sir Francis Henry, Bart., M.P., Q.C., *St. John's Lodge, Regent's-park, N.W.*
1877	Good, Alfred (7, *Poultry, E.C.*), 91, *Highbury Hill, N.*
1868	Göschen, The Right Hon. George Joachim, M.P., 67, *Portland-place, W.*
1855	*Gosset, John Jackson, *Thames Ditton, Surrey.*
1873	Gouly, Edward James, *Bullion Office, Bank of England, E.C.*
1853	Gover, William Sutton, F.I.A., 4, *Queen-street-place, Southwark Bridge, E.C.*
1876	Grahame, James, C. A., 12, *St. Vincent-place, Glasgow.*
1875	Granville, J., Mortimer, M.D., F.G.S., &c., *Scientific Club*, 7, *Savile-row, W.*
1847	Gray, Thomas, 34, *Fenchurch-street, E.C.*
1877	Greene, William Thomas, M.A., M.D., 218, *Old Kent-road, S.E.*
1868	Griffith, Edward Clifton, 48, *Pall Mall, S.W.*

Year of Election	
1841	Griffith, John, 6, *Hanover-terrace, Regent's-park, N.W.*
1841	Griffith, Richard Clewin, F.R.G.S., 20, *Gower-street, W.C.*
1872	Griffiths, John George, 4, *Lothbury, E.C.*
1875	Gunn, Arthur, *Metropolitan Board of Works, Spring-gardens, S.W.*
1860	Gurney, Daniel, *North Runcton, near King's Lynn, Norfolk.*
1877	Gutteridge, Richard Sandon, M.D., 33, *Brook-street, Grosvenor-square, W.*
1839	Guy, William Augustus, M.B., F.R.C.P., V.P.R.S., (*Honorary Vice-President*), 12, *Gordon-street, Gordon-square, W.C.*
1873	*Haggard, Frederick T., *Eltham Court-road, Eltham, Kent.*
1872	Haliburton, R. G.,
1876	Hall, Edward Algernon, 20, *Clarges-street, W.*
1876	Hall, Edward Hepple, 36, *Elgin-road, St. Peter's-park, W.*
1869	Hall, James Macalester, *Killean House, Tayinloan, Argyleshire.*
1860	Hamilton, Archibald, J.P., (*Vice-President*), *South Barrow, Bromley, Kent.*
1873	Hamilton, Lord George Francis, M.P., 17, *Montagu-street, Portman-square, W.*
1855	Hammick, James Thomas, *General Register Office, Somerset House, W.C.*
1841	Hampton, The Right Hon. Lord, G.C.B., D.C.L., (*Honorary Vice-President*), 9, *Eaton-square, S.W.; and Westwood-park, Droitwich*
1877	Hanbury, Philip Capel, 60, *Lombard-street, E.C.*
1873	Hanbury, Robert William, M.P., *Ilam Hall, Ashbourne, Derbyshire.*
1869	Hancock, William, 33, *Cornhill, E.C.*
1875	Hankey, Ernest Alers, *Elmhyrst, Bickley Park, Kent.*
1837	*Hankey, John Alexander, J.P., *Balcombe-place, Cuckfield, Sussex.*
1861	Hannyngton, Major-General John Caulfield, F.I.A., *India Office, Westminster, S.W.*
1876	Hansard, Luke, 68, *Lombard-street, E.C.*

Year of Election.	
1871	Harcourt, Sir William Vernon, Q.C., M.P., 14, *Stratford-place, W.*
1877	Harding, Charles, M.R.S.L., F.R.G.S., 7, *Bank Buildings, E.C.*
1875	Hardwicke, William, M.D., *Holder's Hill Hall, Holder's Hill, Hendon, N.W.*
1877	Harold, Frederick Richard, 12, *Landseer-road, Upper Holloway, N.*
1868	Harris, David, *Caroline Park, Granton, Edinburgh.*
1868	Harrison, John, 85, *Northgate, Darlington.*
1834	Harrowby, The Right Hon. the Earl of, K.G., D.C.L., F.R.S., (*Honorary Vice-President*), 39, *Grosvenor-square, W.*
1870	Hartley, Fountain John, *Gloucester House*, 97, *Gazenove-road, Upper Clapton, N.*
1873	Haughton, Benjamin, C.E., 1, *Westminster-chambers, Victoria-street, S.W.*
1875	Haughton, Colonel J. Colpoys, C.S.I., 12, *Pelham-crescent, S. Kensington, S.W.*
1876	Hawkins, Alfred Templeton, 20, *Great George-street, Westminster, S.W.*
1834	Hawkins, Francis Bisset, M.D., F.R.S., 146, *Harley-street, W.*
1873	Hay, James Lamb Napier, *Queen Insurance Company, Calcutta.*
1877	Hedley, Thomas Fenwick, 12, *Park-place, West, Sunderland.*
1870	Hefford, G. V., *Rugby.*
1860	Helder, Stewart, F.I.A., 2, *Broad Sanctuary, S.W.*
1865	Hendriks, Augustus, F.I.A., 7, *Cornhill, E.C.*
1855	*Hendriks, Frederick, 1, *King William-street, E.C.*
1858	Herapath, Spencer, F.G.S., 18, *Upper Phillimore-gardens, W.*
1877	*Herbage, William, *London & South Western Bank*, 7, *Fenchurch-street, E.C.*
1874	Hertz, James, 124, *Cannon-street, E.C.*
1834	*Heywood, James, M.A., F.R.S., F.G.S., (*Honorary Vice-President and Trustee*), 26, *Palace-gardens, Kensington, W.; Athenæum Club.*
1869	Hickson, Joseph, J.P., *Montreal, Canada.*
1875	Higham, Charles Daniel, F.I.A., 3, *Princes-street, Bank, E.C.*
1834	Hill, Sir Rowland, K.C.B., D.C.L., F.R.S., *Hampstead, N.W.*

Year of Election.	
1876	Hilton, John, F.R.S., F.R.C.S., &c., 10, *New Broad-street, E.C.*
1873	Hime, Capt. H. W. L., R.A., *Colchester, Essex.*
1859	Hincks, His Excellency, Sir Francis, *Montreal, Canada.*
1870	*Hoare, Henry, 9, *St. James's-square, S.W.*
1834	*Hodge, William Barwick, F.I.A., 5, *Whitehall, S.W.*
1867	Hodgson, Professor W. B., LL.D., *Bonaly Tower, Colinton, N.B.*
1873	Hogg, Colonel Sir James McGarel, Bart., M.P., 17, *Grosvenor-gardens, S.W.*
1877	Holden, Isaac, 64, *Cross-street, Manchester.*
1877	Holmes, Richard Henry, *Elswick-villa, Rye Hill, Newcastle-on-Tyne.*
1874	Hood, Charles, F.R.S., F.R.A.S., 10, *Leinster-gardens, Hyde-park, W.*
1871	Hooper, Angus Cameron, *Montreal, Canada.*
1874	Hooper, George D., *Pembroke Villa, Oxford-road, Chiswick, W.*
1855	Houghton, The Right Honourable Lord, D.C.L., F.R.S., (*Honorary Vice-President*), *Fryston Hall, Ferrybridge, Yorkshire.*
1871	Hoyer, Henry, (care of W. A. Hoyer,) 31, *Priory-road, South Lambeth, S.W.*
1876	Hoyle, William, *Claremont, Tottington, Bury, Lancaster.*
1872	Hubbard, Egerton J., M.P., 4, *St. Helen's-place, Bishopsgate-street, E.C.*
1853	*Hubbard, The Right Hon. John Gellibrand, M.P., *Bank of England, E.C.*
1864	Hudson, Thomas, 21, *Gately-road, Brixton, S.W.*
1871	Hughes, Albert William, F.R.G.S., *Karachi, Sindh, India.*
1872	Humphreys, George, M.A., F.I.A., 79, *Pall Mall, S.W.*
1874	Humphreys, Noel Algernon, *Register-General's Office, Somerset House, W.C.*
1873	Hunt, Sir Henry Arthur, C.B., 54, *Eccleston-square, S.W.*
1857	Hurst, George, *King's Brook House, St. Mary's, Bedford.*
1877	Huskinson, Thomas, *Epperstone Manor, Nottingham.*
1874	Hutton, Charles William Cookworthy, J.P., *Belair, Dulwich, S.E.*

Year of Election.	
1873	Hyndman, Henry Mayer, 10, *Devonshire-street, Portland-place, W.*
1866	Ince, Henry Bret, 18, *Old-square, Lincoln's-inn, W.C.*
1869	Ingall, Samuel, F.R.G.S., *Kent-end, Forest-hill, Kent, S.E.*
1874	*Ingall, William Thomas Fitzherbert Mackenzie, 50, *Threadneedle-street, E.C.*
1869	Inglis, Cornelius, M.D., 1, *Albert Mansions, Victoria-st., S.W.; & Athenæum Club.*
1839	Irving, John, 94, *Eaton-place, S.W.*
1864	*Ivey, George Pearse, *Stanstead House, Walter-road, Swansea.*
1872	Janson, Frederick Halsey, F.L.S., 41, *Finsbury-circus, E.C., and Oak Bank, Chislehurst.*
1851	*Jellicoe, Charles, F.I.A., 12, *Cavendish-place, W.*
1862	Jeula, Henry, F.R.G.S., 29, *Gracechurch-street, E.C.*
1864	*Jevons, Professor W. Stanley, M.A., LL.D., F.R.S., (*Secretary*), *The Chesnuts, Branch-hill, Hampstead Heath, N.W.*
1871	Johnson, Edmund, 3, *Castle-street, Holborn, E.C.*
1872	Johnston, Francis J., *Lamas, Chislehurst.*
1877	Jones, Theodore Brooke, 1, *Finsbury-circus, E.C.; Georgeville, Harrogate, Yorks.*
1874	Jones, Herbert, 15, *Montpelier-row, Blackheath, S.E.*
1873	Jones, Sir Willoughby, Bart., M.A., *Cranmer Hall, Fakenham, Norfolk.*
1858	Jourdan, Francis, *Avenue House, Hampstead, N.W.*
1877	Karuth, Frank O., *Oakhurst, Beckenham, Kent.*
1873	Kay, Duncan James, 60, *Queen's-gate, S.W.*
1877	Kealy, James William, 26, *Moorgate-steet, E.C.*
1874	Kelly, Charles, M.D., *Worthing, Sussex.*
1867	Kelly, Edward Robert, A.M., 51, *Great Queen-street, Lincoln's-inn-fields, W.C.*

Year of Election.

1873 Kemp, Samuel,
Oriel House, Bath.

1864 Kennedy, Colonel John Pitt,
66, *St. George's-square, S.W.*

1868 Kennedy, Peter,
13, *Cornwall-terrace, Regent's-park, N.W.*

1870 Kennedy, William R.,
27, *Rodney-street, Liverpool.*

1874 Kennelly, David Joseph, F.R.G.S., F.R.A.S.,
8, *Union-court, Old Broad-street, E.C.*

1852 Kimberley, The Right Honourable the Earl of, M.A., P.C.,
35, *Lowndes-square, S.W.*

1872 Knight, John P.,
London, Brighton, & S. Coast Rail., London Bridge, E.C.

1865 Kühner, Henry, (*c/o* Messrs. Kühner, Hendschel & Co.),
145, *Cannon-street, E.C.*,

1869 Kyshe, John Benjamin,
Central Civil Status Office, Mauritius.

1873 Lack, H. Reader (*Office of Commissioners of Patents*),
25, *Southampton-buildings, E.C.*

1869 Lamport, Charles (*Queen's-gate Gardens, S.W.*),
Plasmawr, Penmaen Mawr, North Wales.

1873 Lancaster, D., F.I.A.,
Indian Life Assurance Company, Meerut, India.

1877 Lane, Cecil N.,
King's Bromley Manor, Lichfield.

1875 Lane, Thomas,
Percy Cottage, Eastbourne.

1874 Lang, George Murray, R.N.,
18, *Cheyne-walk, Chelsea, S.W.*

1843 *Larcom, General, Sir Thomas A., Bart., K.C.B., LL.D., F.R.S.,
Heathfield, Fareham, Hants.

1874 Lawes, John Bennett, F.R.S., F.C.S.,
Rothamsted, St. Albans.

1877 Lawrance, Henry,
58, *Euston-square, N.W.*

1873 Lawrence, The Right Hon. Lord, G.C.B., G.C.S.I.,
26, *Queen's-gate, S.W.*

1873 Lawrie, James, F.R.G.S.,
Kelvin House, Quadrant-road, Highbury, N.

1873 Lawson, Robert,
20, *Lansdowne-road, Notting-hill, W.*

1873 Lea, Thomas,
72, *Chester-square, S.W.*

1877 Lefevre, George John Shaw, M.P. (*President*),
Ascot Wood Cottage, Staines.

1877 *Leggatt, Daniel, LL.D.,
55, *Lincoln's-inn-fields, W.C.*

Year of Election.	
1870	Leitch, John Muir, 18, *King William-street, E.C.*
1873	Leslie, Francis Seymour, *Ealing, W.*
1851	Levi, Professor Leone, LL.D., F.S.A., 5, *Crown Office-row, Temple, E.C.*
1867	Lewis, Charles Edward, M.P., 8, *Old Jewry, E.C.*
1873	Lewis, James, 1, *Stoneleigh Villas, Gresham-road, Brixton, S.W.*
1877	Lewis, John, 1, *Temple-row West, Birmingham.*
1862	Lewis, Robert, 1, *Bartholomew-lane, E.C.*
1862	Leyland, John E., F.I.A.,
1877	Ligertwood, Thomas, M.D., F.R.C.S., *Royal Hospital, Chelsea, S.W.*
1868	Lissa, Joseph J. Cohen de, *Port Louis, Mauritius.*
1845	*Lister, William,
1834	Lloyd, John Horatio, 100, *Lancaster-gate, Hyde-park, W.*
1864	Logan, D., *Care of Messrs. Richardson*, 23, *Cornhill, E.C.*
1876	Lord, James, F.S.A., 1, *Whitehall-gardens, S.W.*
1876	*Lornie, John, *Rosemount, Kirkcaldy.*
1834	Lovelace, The Right Honourable the Earl of, F.R.S., *East Horsley Park, Ripley, Surrey.*
1875	Loyd, William Jones, J.P., 16, *Grosvenor-place, S.W., and Langleybury, Watford*
1865	Lubbock, Sir John, Bart., M.P., F.R.S., (*Trustee*), *High Elms, Farnborough, Kent.*
1843	Lumley, William Golden, Q.C., LL.M., *Local Government Board, Whitehall, S.W.*
1875	Mabson, Richard Rouse, *Holly Lodge, Cold Harbour-lane, Camberwell, S.E*
1873	*Macandrew, William, J.P., 29, *Pembridge-square, W.*
1873	McArthur, Alexander, M.P., *Raleigh Hall, Brixton, S.W.*
1873	McArthur, William, M.P., F.R.G.S., (Alderman), 1, *Gwydyr Houses, Brixton Rise, S.W.*
1867	M'Clean, Frank, 23, *Great George-street, Westminster, S.W.*

Year of Election.

1864 M'Clelland, James,
32, *Pembridge-square, W.*

1873 McDermott, Edward,
Hill Side, Grove-park, Camberwell, S.E.

1868 *Macdonald, James,
7, *Lothbury, E.C.*

1872 Macdonell, John,
3, *Elm-court, Temple, E.C.*

1873 *McEwen, Laurence T.,
39, *Old Broad-street, E.C.*

1856 MacGillivray, Donald, F.I.A.,
54, *Moorgate-street, E.C.*

1871 Mackay, James Macgregor,
32, *Brunswick-square, Brighton.*

1876 McKenna, Sir Joseph N., M.P.,
67, *Lancaster-gate, W.*

1876 *McLean, Robert Allan, F.R.G.S.,
8, *Old Jewry, E.C.*

1871 Mackenzie, Alfred Westwood, (*c/o Dr. Stephen Mackenzie*),
26, *Finsbury-square, E.C.*

1871 Mackeson, Charles,
The Admiralty, New-street, Spring-gardens, S.W.

1870 Maclagan, David,
22, *George-street, Edinburgh.*

1874 Macleod, The Right Hon. Sir John Macpherson, K.C.S.I.,
1, *Stanhope-street, Hyde Park, W.*

1863 *Maclure, J. W.,
Carlton Club; The Home, Whalley Range, Manchester.

1875 Macpherson, Hugh Martin, F.R.C.S., (*Inspector-General*),
14, *St. James's-square, S.W.*

1871 Malgarini, Frederick Lewis, F.R.S.E.,
7, *Whitehall-place, S.W.*

1872 Manning, His Eminence The Most Rev. H. E., Cardinal,
Archbishop's House, Westminster, S.W.

1877 *Maple, John Blundell,
8, *Clarence-terrace, Regent's-park, N.W.*

1874 Markham, Clements R., C.B., F.R.S., F.R.G.S.,
21, *Eccleston-square, S.W.*

1875 Marsh, Alfred,
85, *Gracechurch-street, E.C.*

1860 Marsh, Matthew Henry,
Bamridge, near Andover, Hants.

1865 Martin, Frederick,
7, *Fortess-terrace, Junction-road, N.W.*

1873 Martin, Henry,
National Bank of India, 39a, Threadneedle-street, E.C.

1867 Martin, James,
St. Bride's-street, Ludgate-circus, E.C.

1874 *Martin, John Biddulph, M.A., F.Z.S.,
6B, *The Albany, Piccadilly, W.*

Year of Election.	
1877	Martin, Josiah, F.I.A., 32, *New Bridge-street, E.C.*
1872	*Martin, Richard Biddulph, M.A. (*Treasurer*), 68, *Lombard-street, E.C.*
1876	Martin, Thomas Jaques, *Colonial Life Assurance Company, Melbourne, Victoria.*
1875	*Mathers, John Shackleton, *Hanover House, Leeds, Yorkshire.*
1870	Maxse, Rear-Admiral Frederick A. 67, *Cromwell-road, South Kensington, S.W.*
1874	May, Frank, *Bank of England, Threadneedle-street, E.C.*
1874	Maynard, Henry Wheler, *St. Aubyns, Grosvenor-hill, Wimbledon, S.W.*
1873	Meen, Joseph Austin, 33, *Cornhill, E.C.*
1853	*Meikle, James, F.I.A., 6, *St. Andrew's-square, Edinburgh.*
1873	Mellor, T. Randolph, C.E., *Earn Bank, Eastbourne.*
1861	Messent, John, F.I.A., 429, *West Strand, W.C.*
1877	Metcalfe, Richard, *Gräefenberg House, New Barnet, Herts.*
1877	Michael, William H., 1, *Park Prospect, St. James's-park, S.W.*
1875	Mildmay, Henry Bingham, J P., *Shoreham; and* 8, *Bishopsgate-street Within, E.C.*
1873	Millar, William Henry, *Cleveland Lodge, New Park-road, Brixton-hill, S.W.*
1877	Miller, Robert Ferguson, *Exchange-place, Middlesbrough.*
1864	Minett, John Thomas, 1, *Adelaide-place, E.C.*
1877	Mitchell, Joseph Thomas, M.R.C.S., 206, *South Lambeth-road, S.W.*
1874	*Mocatta, F. D., F.R.G.S., 9, *Connaught-place, W.*
1842	Moffatt, George, 103, *Eaton-square, S.W.*
1874	Moore, Charles Rendall, 5, *Cowper's-court, Cornhill, E.C.*
1877	Moore, Edward, 3, *Crosby-square, E.C.*
1874	Moore, Sandford, M.B., *South Camp, Aldershot.*
1872	Morgan, Octavius Vaughan, J.P., 13, *Boltons, West Brompton, S.W.*
1873	*Morley, Samuel, M.P., 18, *Wood-street, E.C.;* 16, *Upper Brook-street, W.*

Year of Election.

1874 *Morris, James, M.D., F.R.C.S.,
13, *Somers-place, Hyde-park-square, W.*

1874 Morris, John,
6, *Old Jewry, London, E.C.*

1877 Mort, William,
1, *Stanley-crescent, Notting-hill, W.*

1873 Morton, James,
Balclutha, Greenock, N.B.

1847 *Mouat, Frederic J., M.D., F.R.C.S., (*Foreign Secretary*),
12, *Durham-villas, Kensington, W.*

1877 Mullen, Robert Gordon,
Fairview, Widmore-road, Bromley, Kent.

1865 Nasmith, David,
4, *Garden-court, Temple, E.C.*

1854 Neild, Alfred,
Mayfield, Manchester.

1869 Neison, Francis Gustavius Paulus,
93, *Adelaide-road, South Hampstead, N.W.*

1877 Nevill, Charles Henry,
11, *Queen Victoria-street, E.C.*

1862 Newbatt, Benjamin, F.I.A., F.R.G.S.,
13, *St. James's-square, S.W.*

1877 Newington, Samuel, M.A.,
Ticehurst, Sussex.

1847 *Newmarch, William, F.R.S., F.I.A.,
(*Trustee and Honorary Vice-President*),
Beech Holme, Nightingale-lane, Clapham-common, S.W.

1869 Newmarch, William T., A.A., Oxon,
67, *Lombard-street, E.C.*

1858 Nightingale, Miss Florence,
35, *South-street, Park-lane, W.*

1874 Nissen, Hillary Nicholas, J.P.,
43, *Mark-lane, E.C.*

1877 Nix, Samuel Dyer,
3, *King-street, Cheapside, E.C.*

1871 *Noble, Benjamin,
North-Eastern Bank, Newcastle-on-Tyne.

1870 Noble, John,
21, *Queen Anne's-gate, Westminster, S.W.*

1873 Noott, Major Francis Harry,
H.M. Convict Prison, Parkhurst.

1874 Norfolk, Ernest Walter,

1834 Norman, George Warde, J.P.,
Bromley, Kent.

1877 Norman, General, Sir Henry Wylie, K.C.B.,
16, *Westbourne-square, W.*

1869 Norwood, Charles Morgan, M.P.,
21, *Billiter-street, E.C.*

Year of Election	
1862	Ogbourne, Charles Henry, *The Battery, Newquay, Cornwall.*
1877	Ogle, William S., 2, *Gresham-buildings, E.C.*
1876	Orange, William, M.D., *Broadmoor, Wokingham, Berks.*
1877	Ormond, Richard, *Belgrave-terrace, Newcastle-on-Tyne.*
1874	Overall, William Henry, F.S.A., *Librarian, Guildhall, E.C. (Representing the Library Committee of the Corporation of the City of London.)*
1834	*Overstone, The Right Honourable Lord, F.R.G.S., (*Honorary Vice-President*), 2, *Carlton-gardens, S.W.*
1866	*Palgrave, Robert Harry Inglis, J.P., 11, *Britannia-terrace, Great Yarmouth, Norfolk*
1869	Patterson, Robert Hogarth, 22, *Wingate-road, Hammersmith, W.*
1870	Pattison, William Pollard, F.I.A., 7, *Dean-street, Park-lane, W.*
1877	Paul, Henry M., 12, *Lansdowne-crescent, Notting Hill, W.*
1877	Payne, William Percy, 136, *Mansfield-road, Nottingham.*
1873	Pearce, Charles William, *Devon House, Acre-lane, S.W.*
1875	Pearson, Arthur, F.I.A., 3, *Princes-street, Bank, E.C.*
1876	Pearson, Edwin James, *Board of Trade, Whitehall, S.W.*
1837	*Pearson, Professor John, Q.C., 13, *Beaufort-gardens, Brompton-road, S.W.*
1876	*Peek, Sir Henry William, Bart., M.P., *Wimbledon House, S.W.*
1871	Pennington, Frederick, M.P., 17, *Hyde Park-terrace, W.*
1874	Pepys, The Hon. George, 7, *Norfolk-square, Hyde-park, W.*
1874	Phené, John S., F.R.G.S., F.S.A., &c., 5, *Carlton-terrace, Oakley-street, S.W.*
1877	Phillipps, Henry Matthews (Messrs. Borrowman, Phillipps &c.), 41, *Seething-lane, E.C.*
1835	*Phillips, Sir George Richard, Bart., 22, *Hill-street, Berkeley-square, W.*
1859	Phillips, Henry James, 4, *Ludgate-hill, E.C.*
1873	Phillips, John Searle R., 2, *Essex-road, Sale, Manchester.*

Year of Election.

1877 Phillips, John Walter, M.B., L.R.C.S.,
33, *Store-street, Bedford-square, W.C.*

1871 *Pickering, John, F.R.G.S., F.S.A.,
Springfield Mount, Leeds.

1873 Pickstone, William,
Maesmynan Hall, Holywell.

1838 *Pinckard, George Henry, J.P., F.I.A.,
12, *Grove-road, St. John's-wood, N.W.*

1877 Pink, Charles,
Winchester, Hants.

1877 Pitt, Edward Golledge, M.D.,
17, *Princes-square, St. George's, East, E.*

1867 Plener, Ernest von, (*c/o M. J. Sedlaczek, Austrian Embassy*),
18, *Belgrave-square, S.W.*

1861 Plowden, W. Chicele, (*c/o Messrs. Lyon and Co.*),
Apollo-street, Bombay.

1869 Pochin, Henry Davis,
Barn Elms, Barnes, S.W.

1874 Ponsonby, The Hon. Frederick George Brabazon, M.A.,
3, *Mount-street, Grosvenor-square, W.*

1877 Porter, Robert,
Westfield House, Bath.

1860 Potter, Edmund, F.R.S.,
64, *Queen's-gate, South Kensington, S.W.*

1871 Power, Edward,
16, *Southwell-gardens, Kensington, W.*

1877 *Prance, Reginald Heber,
Frognal, Hampstead, N.W.

1877 Praschkauer, Maximilian,
34, *Seething-lane, E.C.*

1867 Pratt, Robert Lindsay,
80, *Bondgate, Darlington.*

1877 Preen, Harvey Edward,
Kidderminster.

1849 Presant, John,
13, *St. James's-square, S.W.*

1874 Prinsep, Charles Campbell,
Department of Statistics and Commerce, India Office, S.W.

1871 Puleston, John Henry, M.P.,
30, *Abingdon-street, S.W.*

1837 *PURDY, FREDERICK (*Vice-President*),
Local Government Board, Whitehall, S.W.; and 35,
Victoria-road, Kensington, W.

1874 Quain, Richard, M.D., F.R.S., F.R.C.P.,
67, *Harley-street, W.*

1872 *Rabino, Joseph, (*care of Baron J. Vitta*),
8, *Rue Lafont, Lyons.*

Year of Election.

1858 *Radstock, The Right Honourable Lord,
East Sheen, Mortlake, S.W.

1877 Raikes, Captain George Alfred,
63, *Belsize-park, Hampstead, N.W.*

1864 *Raleigh, Samuel,
9, *St. Andrew-square, Edinburgh.*

1860 Ramsay, Alexander Gillespie, F.I.A.,
Canada Life Assurance, Hamilton, Canada West.

1874 Ramsden, Sir James, of Barrow, D.L.,
Furness Abbey, Lancashire.

1865 Ratcliff, Charles,
Athenæum Club, S.W.; and Wyddrington, Birmingham.

1859 Rathbone, P. H.,
Greenbank Cottage, Liverpool.

1874 *Ravenstein, Ernest George, F.R.G.S.,
10, *Lorn-road, Brixton, S.W.*

1877 *Rawlins, Thomas,
45, *King William-street, E.C.*

1870 Rawlinson, Robert, C.B.,
11, *Boltons, West Brompton, S.W.*

1835 Rawson, Sir Rawson William, C.B., K.C.M.G.,
Drayton House, West Drayton, Uxbridge, Middlesex.

1875 Record, John,
Kenninghall-road, Clapton, E.

1856 Redgrave, Alexander, C.B.,
Factory Inspectors' Office, Whitehall, S.W.

1867 Reid, Herbert Lloyd,
3, *Eland-terrace, Lavender-hill, S.W.*

1862 Reynolds, Frederick,
66, *Dalston-lane, Dalston, E.*

1876 Rice, Thomas Fitzroy,
Grand Port, Mauritius.

1873 Ripon, The Most Hon. the Marquess of, K.G., F.R.S, &c.,
1, *Carlton-gardens, S.W.*

1851 Robertson, Alexander,
112, *Bishopsgate-street Within, E.C.*

1868 Robinson, Sir William Rose, K.C.S.I.,
Civil Service, Madras.

1873 *Rosebery, The Right Hon. the Earl of,
2, *Berkeley-square, W.*

1834 *Ross, David, of Bladensburg,
Rostrevor, Co. Down, Ireland.

1865 Ruck, George T.,
33, *Camden-road, N.W.*

1834 Russell, The Right Honourable Earl, K.G., G.C.M.G.,
(*Honorary Vice-President*),
37, *Chesham-place, S.W.*

1874 Rutherford, Charles,
29, *St. Swithin's-lane, E.C.*

Year of Election.

1873 *Salisbury, The Most Hon. the Marquess of, P.C., F.R.S.,
20, *Arlington-street, W.*

1875 *Salomons, Sir David Lionel, Bart., J.P.,
Broom-hill, Tunbridge Wells.

1876 Salt, Thomas, M.P.,
Local Government Board, Whitehall, S.W.

1868 Samuelson, Henry Bernhard, M.P.,
56, *Prince's-gate, Hyde-park, S.W.*

1860 Sargant, William Lucus,
Edgbaston, Birmingham.

1877 Saunders, Charles Edward, M.D.,
21, *Lower Seymour-street, Portman-square, W.*

1874 Saunders, Francis,
6, *Limes-grove, Lewisham, S.E.*

1852 Saunders, James Ebenezer, jun., F.G.S.
9, *Finsbury-circus, E.C.*

1869 Sayle, Philip, F.R.H.S.,
4, *St. Paul's Church-yard, E.C.*

1877 Schiff, Charles
36, *Sackville-street, Piccadilly, W.*

1877 Schneidau, Charles John,
3, *Westwick-road, West Kennington-park, W.*

1875 Scott, Edward Henry, J.P.,
27, *Grosvenor-square, W.*

1865 Scudamore, Frank Ives, C.B.,
Constantinople.

1866 Senior, George,
Rose Hill, Dodworth, near Barnsley.

1869 Seyd, Ernest,
38, *Lombard-street, E.C.*

1873 Seyd, Richard,
38, *Lombard-street, E.C.*

1841 Shaftesbury, The Right Hon. the Earl of, K.G.
(*Honorary Vice-President*),
24, *Grosvenor-square, W.*

1875 Shelford, William, C.E.,
35A, *Great George-street, Westminster, S.W.*

1871 Sidgwick, Henry,
Trinity College, Cambridge.

1877 Simonds, John Cabourn,
Fishloft Manor, Boston, Lincoln.

1850 Singer, Charles Douglas,
9, *The Terrace, Upper Clapton, E.*

1877 Skeats, Herbert S.,
2, *Serjeant's-inn, Fleet-street, E.C.*

1873 Skoines, Henry Frost,
7, *Argyle-street, King's Cross, W.C.*

1877 Sloley, Robert Hugh.
61, *Bartholomew-close, E.C.*

1869 Smee, Alfred Hutcheson, M.R.C.S.,
7, *Finsbury-circus, E.C.*

Year of Election	
1874	Smith, Edward, *Gresham Life Office*, 37, *Old Jewry, E.C.*
1871	Smith, E. Cozens, 1, *Old Broad-street, E.C.*
1877	Smith, Howard S., 37, *Bennett's Hill, Birmingham.*
1877	Smith, John, 8, *Old Jewry, E.C.*
1873	Smith, Col. John Thomas, R.E., F.R.S., F.I.A., 10, *Gledhow Gardens, Wetherby-road, S. Kensington, S.W.*
1867	*Smith, The Right Honourable William Henry, M.P., 2, *Hyde-park-street, W.*
1876	Smith, Sydney, 65, *Basinghall-street, E.C.*
1876	Smith, Thomas, M.D., *Portland House, Cheltenham.*
1848	*Sopwith, Thomas, M.A., F.R.S., (*Vice-President*), 103, *Victoria-street, S.W.*
1855	Sowray, John Russell, *Office of Woods*, 1, *Whitehall-place, S.W.*
1877	Spalding, Samuel, *Thornleigh, Sydenham Hill, S.E.*
1874	Spence, James Mudie, F.R.G.S., F.Z.S., *Eglington House, Whalley Range, Manchester.*
1873	Spence, John Berger, 31, *Lombard-street, E.C.*
1867	*Spencer, Robert James, *High-street, Portsmouth.*
1876	Spensley, Howard, *Tintern, Clapham-common, S.W.*
1874	Spicer, James, J.P., *Harts, Woodford, Essex.*
1856	*Sprague, Thomas Bond, M.A., F.I.A., 26, *St. Andrew-square, Edinburgh.*
1872	Spriggs, Joseph, *Dale Cottage, Foxton, near Market Harbro'.*
1856	*Stainton, Henry Tibbats, *Mountsfield, Lewisham, S.E.*
1877	Stanford, Edward, 55, *Charing Cross, S.W.*
1877	Staples, Sir Nathaniel Alexander, Bart., *Lissan, Cookstown, Tyrone.*
1870	Stark, William Emery, *Trinity Cottage, Birchfield-road, Birmingham.*
1877	Startin, James, M.R.C.S., 17, *Sackville-street, W.*
1874	Stone, Alderman David Henry, J.P., 7, *Bucklersbury, E.C.*
1877	Stone, William A., 26, *Nicholas-lane, E.C.; West Hill Lodge, Dartford, Kent.*

Year of Election.

1855 *Stott, John, F.I.A.,
St. Vincent-place, Glasgow.

1865 Strachan, Thomas Young, F.I.A.,
18, *Grainger-street West, Newcastle-on-Tyne.*

1872 Strachey, General Richard, R.E., F.R.S.,
India Office, Westminster, S.W.

1873 Tait, Lawson, F.R.C.S.,
7, *Great Charles-street, Birmingham.*

1859 *Tait, Patrick Macnaghten,
39, *Belsize Park, N.W.; and Oriental Club, W.*

1877 Tatham, George Henry,
2, *Nottingham-terrace, York-gate, Regent's-park, N.W.*

1854 Tayler, William, D.L., F.S.A.,
28, *Park-street, Grosvenor-square, W.*

1877 Taylor, John E.,
12, *Queen's-gate Gardens, South Kensington, S.W.*

1873 Taylor, Peter Alfred, M.P.,
22, *Ashley-place, Westminster, S.W.*

1838 *Taylor, General Pringle, K.H.,

1864 *Thompson, Henry Yates,
Thingwall Broad Green, Liverpool.

1868 Thomson, James,
35, *Nicholas-lane, E.C.*

1871 Thomson, Thomas D.,
79, *Cornhill, E.C.*

1876 Thornely, William,
West Brow, Hampstead, N.W.

1871 Thurlow, The Right Hon. Lord,
Dunphail, N.B.; Traveller's Club, Pall Mall, S.W.

1877 Tiddy, Samuel Vesey,
110, *Cannon-street, E.C.*

1876 Tomkins, George, LL.D.,
32, *New Bridge-street, E.C.*

1855 Tomline, Colonel George,
1, *Carlton House-terrace, S.W.*

1843 Tottie, John William,
Coniston Hall, Bell Bush, Leeds.

1868 *Treatt, Frank Burford, care of J. C. Fussell & Co.
227, *George-street, Sydney, N.S. Wales.*

1868 Tritton, Joseph Herbert,
54, *Lombard-street, E.C.*

1867 Turner, Thomas, J.P., F.R.A.S., F.R.G.S.,
Ashley House, Kingsdown, Bristol.

1841 Tyndall, William Henry,
92, *Cheapside, E.C.*

Year of Election.	
1873	Underdown, Robert George, *London-road Railway Station, Manchester.*
1877	*Urlin, R. Denny, 22, *Stafford-terrace, Phillimore-gardens, W.*
1842	Valpy, Richard, 5, *Rutland-gate, S.W.*
1868	Vanderbyl, Philip, 51, *Porchester-terrace, W.*
1873	Venables, Alfred, 30, *Royal Exchange, E.C.*
1874	Vian, William John, 64, *Cornhill, E.C.*
1876	Vigers, Robert, 4, *Frederick's-place, Old Jewry, E.C.*
1877	Vine, John Richard Somers, 45, *St. Paul's-road, Camden-square, N.W.*
1873	Vivian, Major Quintus, D.L , F.R.G.S., 17, *Chesham-street, S.W.*
1861	Waddell, James, 12, *Queen Victoria-street, E.C.*
1877	Waddy, Henry Edward, L.R.C.P., M.R.C.S. 2, *Clarence-street, Gloucester.*
1873	Wakeford, Henry, *Home Office, Whitehall, S.W.*
1857	*Walford, Cornelius, F.I.A., 86, *Belsize-park-gardens, N.W.*
1871	*Walker, R. Bailey, *Massie-street, Cheadle, Manchester.*
1877	Wallington, Charles, 51, *Moorgate-street, E.C.*
1868	Wallis, Charles, J., 5, *Alfred-road, Highgate Hill, N.*
1876	Walter, Arthur Fraser, 15, *Queen's Gate-terrace, S.W.*
1877	Walter, Captain Edward, *Commissionaires' Office*, 419, *Strand, W.C*
1850	Walter, John, M.P., 40, *Upper Grosvenor-street, W.*
1873	Waring, Charles, 10, *Victoria-chambers, Westminster, S.W.*
1865	Waterhouse, Edwin, B.A., 13, *Gresham-street, E.C.*
1874	Watson, James, F.R.G.S., 24, *Endsleigh-street, Tavistock-square, W.C.*

Year of Election.	
1873	Watson, J. Forbes, M.D., *India Museum, South Kensington, W.*
1865	Watson, William West, *Glasgow.*
1865	Webster, Alphonsus, 44, *Mecklenburg-square, W.C.*
1873	Webster, James Hume, *Keith-lodge, Upper Norwood, S.E.*
1869	Weguelin, Christopher, 57½ *Old Broad-street, E.C.*
1873	Weguelin, Thomas Matthias, M.P., 44, *Grosvenor-gardens, S.W.*
1873	*Welby, Reginald Earle, C.B., *The Treasury, Whitehall, S.W.*
1855	Weldon, James Walton, 1, *St. James's-square, S.W.*
1873	Wellington, His Grace the Duke of, K.G., &c., &c., *Apsley House, Piccadilly, W.*
1873	Wells, W. Lewis, 66, *Old Broad-street, E.C.*
1855	Welton, Thomas Abercrombie, (5, *Moorgate-street, E.C.*), 6, *Offerton-road, Clapham, S.W.*
1876	Westgarth, William, 28, *Cornhill, E.C.*
1875	Whall, John Fitzwilliam, M.A. 16, *Scot-lane, Doncaster.*
1836	*Whishaw, James, 32, *Harewood-square, N.W.*
1859	Whitbread, Samuel, M.P., 10, *Ennismore-gardens, Princes-gate, S.W.*
1876	Whitcher, John, Jr., F.I.A., 81, *King William-street, E.C.*
1868	White, James (*care of White Bros. & Co.*), 58, *Gresham-street, Old Broad-street, E.C.*
1863	White, Leedham, 44, *Onslow-gardens, S.W.;* 85, *Gracechurch-street, E.C.*
1871	White, William, 70, *Lombard-street, E.C.*
1873	Whitehead, Jeffery, 39, *Throgmorton-street, E.C.*
1875	Wilkinson, Thomas Read, *Manchester and Salford Bank, Manchester.*
1860	Willans, John W. (*Leeds Mercury Office, Leeds*), 2, *Headingly-terrace, Leeds.*
1864	Williams, Frederick Bessant, 2, *Ludgate Hill, E.C.*
1870	Williams, H. R., 3, *Lime-street, E.C.; and Oak Lodge, Highgate, N.*
1876	Williams, John Worthey, 127, *Queen Victoria-street, E.C.*

Year of Election.	
1877	Williams, Richard Price, 9, *Great George-street, Westminster, S.W.*
1875	Wilson, Edwards D. J., M.A., 20, *Wiltshire-road, Brixton, S.W.*
1874	*Wilson, Robert P., (*Rose, Wilson, & Rose*), 5, *Cumberland-terrace, Regent's-park, N.W.*
1872	*Winch, William R., *North Mymms Park, Hatfield, Herts.*
1868	Wood, H. W. I. (*Calcutta*), *Care of Messrs. Richardson, 23, Cornhill, E.C.*
1877	Wood, Samuel, F.R.C.S., J.P., *St. Mary's-court, Shrewsbury.*
1873	Woods, Henry, *Warnford Park, Bishop's Waltham, Hants.*
1838	Woolhouse, Wesley Stoker Barker, F.R.A.S., *Alwyne Lodge, Alwyne-road, Canonbury, N.*
1877	Woodrow, Thomas John, *Great Eastern Railway, Liverpool-street, E.C.*
1874	Woolner, Thomas, R. A., 29, *Welbeck-street, Cavendish-square, W.*
1877	Worms, Baron Henry de, F.R.A.S., *South Lodge, South-place, Rutland-gate, S.W.*
1877	Wright, George (*Clarence House, Ipswich*), 52, *Old Broad-street, E.C.*
1864	*Wyatt-Edgell, Alfred, 40, *Lower Grosvenor-street, W.; & Stanford Hall, Rugby.*
1838	*Wyatt-Edgell, Rev. Edgell, 40, *Lower Grosvenor-street, W.; & Stanford Hall, Rugby.*
1872	Yeatman, Morgan, *Shawfield, Bromley, Kent.*
1877	*Youll, John Gibson, *Jesmonds-road, Newcastle-on-Tyne.*
1849	*Young, Charles Baring, 12, *Hyde-park Terrace, W.*

*** *The Executive Committee request that any inaccuracy in the foregoing list may be pointed out to the* Assistant Secretary *and that all changes of address may be notified to him, so that delay in forwarding communications and the publications of the Society may be avoided.*

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Jena ..... PROFESSOR BRUNO HILDEBRAND.

Great Britain and Ireland.

Dublin .....THE PRESIDENT OF THE STATISTICAL AND SOCIAL ENQUIRY SOCIETY OF IRELAND.

Manchester ..... THE PRESIDENT OF THE MANCHESTER STATISTICAL SOCIETY.

Greece.

Athens ..... A. MANSOLAS, *Chef de Division, Directeur du Bureau de Statistique Hellénique.*

Italy.

Genoa ..... SIGNOR FABRIZIO FABIANI.

Naples ..... IL GIUDICE ARPINO.

Rome ..... SIGNOR LUIGI BODIO, *Directeur de la Statistique Générale d'Italie, et Sécrétaire de la Commission Centrale de Statistique.*

„ ..... PROFESSOR CESARE CONTINI, *Membre de la Société Statistique de Paris.*

„ ..... SIGNOR CESARE CORRENTI, *Membre de la Chambre des Députés; Membre du Conseil d'Ētat; Vice-President de la Commission Centrale de Statisque.*

„ ..... IL MARCHESE AVVOCÁTO ERMENEGILDO DE CINQUE QUINTILI, *Sécrétaire Général de la Commission des Hôpitaux Romains.*

Turin ..... PROFESSORE GIOVANNI FLECHIA, *Président de la Faculté de Philosophie et Professeur à l'Université de Turin.*

Venice ..... SIGNOR FRANCESCO FERRARA, *Député au Parlement, Directeur de l'Ecole Supérieure de Commerce.*

Netherlands.

La Haye ..... M. le DR. M. de BAUMHAUER, *Chef du Bureau de Statistique au Ministère de l'Intérieur.*

Portugal.

Lisbon ..... M. A. J. D'AVILA, *Ministre d'Etat honoraire, Conseilleur d'État, et Député des Cortès.*

Russia.

Odessa ..... THOMAS MICHELL, Esq., C.B., F.R.G.S.

St. Petersburg HIS EXCELLENCY M. SEMENOW, *Directeur du Comité Central de Statistique, Conseiller d'État actuel.*

,, M. le DR. J. B. VERNADSKI, *Conseiller d'État actuel, Ex-professeur.*

,, M. A. VESSELOVSKY, *Attaché au Ministère Imperial des Finances.*

Spain.

Madrid ..... SEÑOR DON JOSÉ MAGAZ Y JAIME.

Sweden and Norway.

Christiania..... PROFESSOR T. H. ASCHEHOUG, *Membre de l'Assemblée Nationale de la Norvège.*

,, ... M. A. N. KIAER, *Chef du Bureau de Statistique au Ministère de l'Intérieur, Membre de la Société Royale des Sciences.*

Stockholm ..... M. le DR. FREDERIK THEODOR BERG, *Chef du Bureau Central de Statistique de la Suède.*

,, ... M. EDWARD SCHEUTZ, *Ingénieur Civil.*

Switzerland.

Geneva ..... M. MALLET.

Turkey.

Constantinople. HIS EXCELLENCY AHMED VEFYK PASHA, *Honorary Member of the Statistical Society of Paris.*

AMERICA

Dominion of Canada.

Ottawa ..... JOHN LANGTON, Esq., *Auditor-General.*

United States.

Albany, N.Y. .... THE HON. WILLIAM BARNES, *Counsellor-at-Law (Ex-Superintendent of the Insurance Department).*

Dorchester, Mass. DR. EDWARD JARVIS, A.M., *President of the American Statistical Association, Boston.*

New Haven, Conn. FRANCIS A. WALKER, Esq., M.A., *Professor of Political Economy, Yale College.*

Norwich, Conn. The Hon. DAVID A. WELLS, *President of the American Association for the Promotion of Social Science, Corresponding Member of the Institute of France.*

Taunton, Mass. JOHN E. SANDFORD, Esq., *Speaker of the House of Representatives. Insurance Commissioner.*

Washington, D.C. EDWARD YOUNG, Esq., *Chief of the Bureau of Statistics.*

AUSTRALASIA.

New South Wales.

Sydney ..... EDWARD GRANT WARD, Esq., *Registrar-General.*

New Zealand.

Wellington ..... JAMES HECTOR, Esq., M.D., F.R.S.

Queensland.

Brisbane ..... HENRY JORDAN, Esq., *Registrar-General.*

South Australia.

Adelaide ..... JOSIAH BOOTHBY, Esq., *Under Secretary and Government Statist of South Australia.*

Tasmania.

Hobart Town .... E. SWARBRECK HALL, Esq., M.R.C.S.

,, EDWIN CRADOCK NOWELL, Esq., *Government Statistician.*

Victoria.

Melbourne ..... WILLIAM HENRY ARCHER, Esq., F.I.A., *Registrar-General.*

,, ... HENRY HAYLYN HAYTER, Esq., *Government Statist.*

,, ... HIS HONOR SIR REDMOND BARRY, Kt., *Judge Supreme Court.*

Note.—The Executive Committee request that any inaccuracies in the foregoing List of Honorary Members may be pointed out, and that all changes of address may be notified to the Secretary, so that delay in forwarding communications and the publications of the Society may be avoided.

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RULES OF THE STATISTICAL SOCIETY.

Objects of the Society.

1. The Statistical Society was established to collect, arrange, digest, and publish facts illustrating the condition and prospects of society, in its material, social and moral relations. These facts are for the most part arranged in tabular forms, and in accordance with the principles of the numerical method.

The Society not only collects new materials, but condenses, arranges, and publishes those already existing, whether unpublished or published in diffuse and expensive forms, in the English or in any foreign language.

The Society likewise promotes the discussion of legislative and other public measures from the statistical point of view. These discussions form portions of the Transactions of the Society.

Constitution of the Society.

2. The Society consists of Fellows and Honorary Members, elected in the manner laid down in the following rules.

Number of Fellows and Honorary Members.

3. The number of Fellows shall be unlimited. Foreigners or British subjects of distinction residing abroad may be admitted as Honorary Members: of whom the number shall not be more than seventy at any one time.

Proposal of Fellows.

4. Every Candidate for admission as a Fellow of the Society, shall be proposed by two or more Fellows, who, shall certify from their personal knowledge of him or of his works, that he is a fit person to be admitted a Fellow of the Statistical Society. Every such certificate having been read and approved at a Meeting of the Council, shall be suspended in the meeting-room of the Society until the following Ordinary Meeting, at which the vote shall be taken upon it.

Election of Fellows.

5. In the election of Fellows, the votes shall be taken by ballot. No person shall be admitted unless at least sixteen Fellows vote, and unless he have in his favour three-fourths of the Fellows voting.

Admission of Fellows.

6. Every Fellow elect shall appear for his admission on or before the third Ordinary Meeting of the Society after his election, or within such time as shall be granted by the Council.

The manner of admission shall be thus:—

Immediately after the reading of the minutes, the Fellow elect, having first paid his subscription for the current year or his composition, shall sign the obligation contained in the Fellowship-book, to the effect following:—

"We, who have underwritten our "names, do hereby undertake, each for "himself, that we will endeavour to "further the good of the Statistical "Society for improving Statistical "Knowledge, and the ends for which "the same has been founded; that "we will be present at the Meet-"ings of the Society as often as con-"veniently we can, and that we will "keep and fulfil the Rules and Orders "of this Society: provided that when-"soever any one of us shall make known, "by writing under his hand, to the "President for the time being, that he "desires to withdraw from the Society, "he shall be free thenceforward from "this obligation."

Whereon the President, taking him by the hand, shall say,—"*By the autho-"rity and in the name of the Statis-"tical Society I do admit you a "Fellow thereof.*"

Upon their admission Fellows shall have the right of attaching to their names the letters F.S.S.

Admission of Honorary Members.

7. There shall be Two Meetings in the year, on such days as shall be hereafter fixed by the Council, at which *Honorary Members* may be elected.

No Honorary Member can be recommended for election but by the Council. Any Member of the Council may propose a Foreigner or British subject of distinction residing abroad at any Meeting of the Council, delivering at the same time a written statement of the qualifications, offices held by, and published works of the person proposed; and ten days' notice at least shall be given to every Member of the Council, of the day on which the Council will vote by ballot on the question whether they will recommend the person proposed. No such recommendation to the Society shall be adopted unless at least three-fourths of the votes are in favour thereof.

Notice of the recommendation shall be given from the chair at the Meeting of the Society next preceding that at which the vote shall be taken thereon. No person shall be elected an Honorary Member unless sixteen Fellows vote and three-fourths of the Fellows voting be in his favour.

The Council shall have power to elect as Honorary Members, the President for the time being of the Statistical Societies of Dublin, Manchester, and Paris, and the President of any other Statistical Society at home or abroad.

Payments by Fellows.

8. Every Fellow of the Society shall pay a yearly subscription of *Two Guineas*, or may at any time compound for his future yearly payments by paying at once the sum of Twenty Guineas.*

Defaulters.—Withdrawal of Fellows.

9. All yearly payments are due in advance on the 1st of January, and if any Fellow of the Society have not paid his subscription before the 1st of July, he shall be applied to in writing by the Secretaries, and if the same be not paid before the 1st of January of the second year, a written application shall again be made by the Secretaries, and the Fellow in arrear shall cease to receive the Society's publications, and shall not be entitled to any of the privileges of the Society until such arrears are paid; and if the subscription be not discharged before the 1st of February of the second year, the name of the Fellow thus in arrear shall be exhibited as a defaulter on a card suspended in the meeting-rooms; and if, at the next Anniversary Meeting, the amount still remain unpaid, the defaulter shall be announced to be no longer a Fellow of the Society, the reason for the same being at the same time assigned. No Fellow of the Society can withdraw his name from the Society's books, unless all arrears be paid; and no resignation will be deemed valid unless a written notice thereof be communicated to the Secretaries. No Fellow shall be entitled to vote at any Meeting of the Society until he shall have paid his subscription for the current year.

Expulsion of Fellows.

10. If any Fellow of the Society, or any Honorary Member, shall so demean himself that it would be for the dishonour of the Society that he longer continue to be a Fellow or Member thereof, the Council shall take the matter into consideration; and if the majority of the Members of the Council present at some Meeting (of which and of the matter in hand such Fellow or Member, and every Member of the Council, shall have due notice) shall decide by ballot to recommend that such Fellow or Member be expelled from the Society, the President shall at the next Ordinary Meeting announce to the Society the recommendation of the Council, and at the following Meeting the question shall be decided by ballot, and if at least three-fourths of the number voting are in favour of the expulsion, the President shall forthwith cancel the name in the Fellowship-book, and shall say,—

"By the authority and in the name "of the Statistical Society, I do declare "that A. B. (naming him) is no longer "a Fellow (or Honorary Member) "thereof."

* Cheques should be made payable to the Society and crossed "Drummond and Co."

And such Fellow or Honorary Member, shall thereupon cease to be of the Society.

Trustees.

11. The property of the Society shall be vested in *three Trustees*, chosen by the Fellows. The Trustees are eligible to any other offices in the Society.

President, Council, and Officers.

12. The Council shall, independent of the Honorary Vice-Presidents, consist of thirty-one Members, of whom one shall be the President, and four be nominated Vice-Presidents. The Council shall be elected as hereafter provided. Any five of the Council shall be a quorum. From the Council shall be chosen a *Treasurer, three Secretaries*, and a *Foreign Secretary*, who may be one of the Secretaries. Six Fellows, at least, who were not of the Council of the previous year, shall be annually elected.

Election of President and Officers.

13. The President shall be chosen yearly by the Fellows. The same person shall not be eligible more than two years in succession.

The former Presidents who are continuing Fellows of the Society shall be Honorary Vice-Presidents; four Vice-Presidents shall be yearly chosen from the Council by the President.

Any Honorary Vice-President may take part in the deliberations of the Council on expressing a wish to that effect: and when attending the Meetings of the Council, shall exercise all the rights and powers of a Member of the Council.

The Treasurer and Secretaries shall be chosen yearly by the Fellows from the Council.

Election of Council.

14. The Council shall, previously to the Anniversary Meeting, nominate, by ballot, the *Fellows whom they recommend* to be the next President and Council of the Society. They shall also recommend for election a Treasurer and Secretaries (in accordance with Rule 12). Notice shall be sent to every Fellow whose residence is known to be within the limits of the metropolitan post, at least a fortnight before the Anniversary Meeting, of the names of Fellows recommended by the Council.

Extraordinary Vacancies.

15. On any *extraordinary vacancy* of the Office of the President, or other Officer of the Society, or in the Council, the Secretaries shall summon the Council with as little delay as possible, and a majority of the Council, thereupon meeting in their usual place, shall, by ballot, and by a majority of those present, choose a new President, or other Officer of the Society, or Member of the Council, to be so until the next Anniversary Meeting.

Committees.

16. The Council shall have power to appoint *Committees of Fellows* and also an Executive Committee of their own body. The Committees shall report their proceedings to the Council. No report shall be communicated to the Society which is not approved by the Council.

Meetings Ordinary and Anniversary.

17. The *Ordinary Meetings* of the Society shall be monthly, or oftener, during the Session, which shall be from the 1st of November to the 1st of July, both inclusive, on such days and at such hours as the Council shall declare. The *Anniversary Meeting* shall be held on such day in June of each year as shall be appointed by the Council for the time being.

Business of Ordinary Meetings.

18. The business of the *Ordinary Meetings* shall be to admit Fellows, to read and hear reports, letters, and papers on subjects interesting to the Society. Nothing relating to the rules or management of the Society shall be discussed at the Ordinary Meetings, except that the *Auditors' Report* shall be received at the Ordinary Meeting in *February*, and that the Minutes of the Anniversary Meeting, and of every Special General Meeting, shall be confirmed at the next Ordinary Meeting after the day of such Anniversary or Special General Meeting. *Strangers* may be introduced to the Ordinary

Meetings, by any Fellow, with the leave of the President, Vice-President, or other Fellow presiding at the Meeting.

Business of Anniversary Meeting.

19. The business of the *Anniversary Meeting* shall be to elect the Officers of the Society, and to discuss questions on its rules and management. No Fellows or Honorary Members shall be proposed or admitted at the Anniversary Meeting. No Fellow shall moot any question on the rules or management of the Society at the Anniversary Meeting, unless after *three weeks' notice* thereof given to the Council, but amendments to any motion may be brought forward without notice, so that they relate to the same subject of motion. The Council shall give fourteen days' notice to every Fellow of all questions of which such notice shall have been given to them.

Special General Meetings.

20. The Council may, at any time, call a *Special General Meeting* of the Society when it appears to them necessary. Any ten Fellows may require a Special General Meeting to be called, by notice in writing signed by them, delivered to one of the Secretaries at an Ordinary Meeting, specifying the questions to be moved. The Council shall, within one week of such notice, appoint a day for such Special General Meeting, and shall give one week's notice of every Special General Meeting, and of the questions to be moved, to every Fellow within the limits of the metropolitan post, whose residence is known. No business shall be brought forward at any Special General Meeting other than that specified in the notice for the same.

Auditors.

21. At the *first Ordinary Meeting* of each year, the Fellows shall choose two *Auditors*, not of the Council, who, with one of the Council, chosen by the Council, shall audit the Treasurer's accounts, and report thereon to the Society, which report shall be presented at the Ordinary Meeting in February. The Auditors shall be empowered to examine into the particulars of all expenditure of the funds of the Society where they shall see occasion, and may report their opinion upon any part of it.

Duties of the President.

22. The *President* shall preside at all Meetings of the Society, Council, and Committees, which he shall attend, and in case of an equality of votes, shall have a second or casting vote. He shall sign all diplomas of admission of Honorary Members. He shall admit and expel Fellows and Honorary Members, according to the rules of the Society.

Duties of the Treasurer.

23. The *Treasurer* shall receive all moneys due to, and pay all moneys due from, the Society, and shall keep an account of his receipts and payments. No sum exceeding Ten Pounds shall be paid but by order of the Council, excepting always any lawful demand for rates or taxes. He shall invest the moneys of the Society in such manner as the Council shall from time to time direct.

Duties of the Secretaries.

24. The *Secretaries* shall, under the control of the Council, conduct the correspondence of the Society; they or one of them shall attend all Meetings of the Society and Council, and shall have the care of duly recording the Minutes of the Proceedings. They shall issue the requisite notices, and read such papers to the Society as the Council may direct.

Powers of the Vice-Presidents.

25. A *Vice-President*, whether Honorary or nominated, in the chair, shall act with the power of the President, in presiding and voting at any Meeting of the Society or Council, and in admitting Fellows; but no Vice-President shall be empowered to sign diplomas of admission of Honorary Members, or to expel Fellows. In the absence of the President and Vice-Presidents, any Fellow of the Society may be called upon, by the Fellows then present, to preside at an Ordinary Meeting. The Fellow so presiding may admit Fellows, but shall not be empowered to act otherwise as President, or Vice-President.

Powers of the Council.

26. The Council shall have control over the papers and funds of the Society, and may, as they shall see fit, direct the publication of papers and the expenditure of the funds, so, that they shall not at any time contract engagements on the part of the Society beyond the amount of the balance that would be at that time in the Treasurer's hands, if all pre-existing debts and liabilities had been satisfied.

27. The Council shall be empowered at any time to frame *Regulations* not inconsistent with these rules, which shall be, and remain in force until the next Anniversary Meeting at which they shall be either affirmed or annulled; but no Council shall have power to renew Regulations which have once been disapproved at an Anniversary Meeting.

28. No Dividend, Gift, Division, or Bonus in money shall be made by the Society, unto or between any of the Fellows or Members, except as hereinafter provided.

29. The Council shall publish a Journal of the Transactions of the Society, and such other Statistical Publications, as they may determine upon, and may from time to time pay such sums to Editors and their assistants, whether Fellows of the Society or not, as may be deemed advisable.

30. All communications to the Society are the property of the Society, unless the Council allow the right of property to be specially reserved by the Contributors.

REGULATIONS OF THE LIBRARY.

1. The Library is open daily from 10 a.m. till 5 p.m., except on Saturdays, when it closes at 2 p.m.; and it is entirely closed during the month of September.

2. Fellows of the Society are permitted to take out Books on making personal application, or by letter addressed to the Librarian.

3. Fellows are not to have more than two works at a time, nor keep any books longer than a month; but when a work is returned, it can be re-borrowed, provided it has not been bespoken in the interim.

4. Scientific Journals and Periodicals are not circulated until the volumes are completed and bound.

5. Cyclopædias and works of reference are not circulated.

6. Any Fellow damaging a book, either replaces the work, or pays a fine equivalent to its value.

7. Works taken from the shelves for reference, are *not* to be replaced, but must be laid on the Library table.

8. The Secretary shall report to the Council any infringement of these regulations.

DONORS TO THE LIBRARY.

During the Year 1877.

The Foreign Governments of

Austria and Hungary
Bavaria.
Belgium.
Denmark.
France.
Germany.
Greece.
Italy.
Netherlands, The.
Prussia.
Roumania.
Russia.
Saxony.
Sweden and Norway.
Switzerland.
The United States of America.
The State of New York.
„ Massachusetts.
„ Michigan
„ Pennsylvania.
„ Rhode Island.
Uruguay.

The Provincial and Colonial Governments of

Bengal.
Mauritius.
New South Wales.
New Zealand.
Queensland.
South Australia.
Tasmania.
Straits Settlements.
Victoria.

Public Departments.

The Admiralty.
„ Army Medical Department.
„ Board of Trade.
„ Convict Prisons, Directors of.
„ Factories, Inspectors of.
„ Fire Brigade, Metropolitan.
„ Friendly Societies, Registrar of.
„ India Office.
„ Local Goverment Board.
„ Naval Medical Department.
The Mining Record Office.
„ Police, London Metropolitan.
„ Police, Dublin Metropolitan.
„ Post Office.
„ Registrar-General of England.
„ „ „ Ireland.
„ „ „ Scotland.
„ Tithe Commissioners.
„ War Office.
„ Warden of Standards.

During the Year 1877—*Continued.*

Academy of Natural Sciences, Philadelphia, U. S. A.
Actuaries, The Institute of, London.
American Academy of Arts and Sciences, Boston.
American Geographical Society of New York.
American Philosophical Society of Philadelphia.
American Statistical Association, Boston, Mass.
Archivio di Statistica, The Editor of.
Armstrong, Sir William, R.N., K.C.B., F.R.S., LL.D.
Asiatic Society of Bengal.
„ „ Japan.
Astor Library, New York, U. S. A.
Athenæum, The Editor of.
Austria, The Central Statistical Bureau of.
Austrian Consul-General, London.

Baker, Dr. H. B., Lansing, U. S. A.
Bankers' Magazine, The Editor of, London.
Bankers' Magazine, The Editor of, New York, U. S. A.
Bavaria, Royal Bureau of Statistics.
Belgium, Minister of Interior.
Berg, Dr. F. T., Stockholm.
Berlin, Statistical Bureau of.
Bodio, Professor Luigi, Rome.
Böhmert, Dr., Dresden.
Boothby, J., Esq., South Australia.
Boschkemper, G., Esq., Holland.
Bourne, Stephen, Esq., F.S.S.
Bowditch, H. J., Esq., Boston.
Brachelli, Dr. H. F., Vienna.
Brassey, Thomas, Esq., M.P.
Brewer, Dr., London.
Briggs, Thomas, Esq., F.S.S.
British Association, The.
Bruton, Leonard, Esq., Bristol.
Budapest, Chamber of Commerce.
„ Statistical Bureau.

Chadwick, Edwin, Esq., C.B.
Cheshire, E., Esq., F.S.S.
China, The Inspector-General of Chinese Maritime Customs.
Civil Engineers, Institution of.
Cobden Club, the Committee of.
Commercial World, The Editor of.
Consul-General of Germany, The.
Consul-General of Italy, The.
Cotton, H. S., Esq., Calcutta.
Council of Foreign Bondholders.

Danvers, Juland, Esq., London.
Denmark, The Bureau of Statistics.
Dent, W. T., Esq.
Dickson, Walter, M.D., R.N.
Dowden, Major T. F., R.E.
Dresden, Statistical Bureau of.
Dublin, Chief Com. of Police.
Du Cane, Colonel E. F., C.B.

East India Association, London.
Engel, Dr. Ernest, Berlin.
Epsom, Local Board of Health.
Everett, H. Sidney, Esq., Berlin.

Farr, Dr. W., F.R.S., London.
Ficker, Dr. Adolf, Vienna.
Finance Chronicle, The Editor of.
Florence, Giunta Comunale de.
Forrest, E. L. de, Esq., Iowa, U.S.A.
France, H.E. Minister of Justice.
Frankfort-on-M., Statistical Bureau.
Franklin Institute, Philadelphia.

Gibbs, Richard, Esq., Melbourne.
Giffen, Robert, Esq., F.S.S.
Glasgow, Philosophical Society of.
„ Sanitary Department.

During the Year 1877—*Continued.*

Granville, J. Mortimer, M.D., F.S.S.
Griffiths, F., Esq., M.D., Sheffield.

Hall, E. Hepple, Esq., London.
Hamburg, Statistical Bureau of.
„ Medical Department of.
Hammick, J. T., Esq., London.
Harrison & Sons, Messrs., London.
Harvey, James, Esq.
Hayter, H. H., Esq., Melbourne.
Hedley, Thomas Fenwick, Esq.
Hendriks, J. E., Esq., Iowa, U.S.A.
Heywood, James, Esq., M.A., F.R.S.
Historical Society of Lancashire and Cheshire.
Howard Association, London.
Hull, H. M., Esq., Tasmania.
Hungary, Statistical Bureau of.

Insurance Gazette, The Editor of.
„ Record, The Editor of.
Italian Legation, London, The.
Italy, The Minister of Finance.
„ „ Public Works.
„ „ Agriculture, Industry, and Commerce.

Jarvis, Dr. E., Dorchester, Mass.
Jordan, Henry, Esq., Brisbane.

Keaughran, T. J., Esq., Singapore.
Keleti, Chas., Esq., Budapest.
King, H. S., and Co., London.
King's College, London.
Knox, John Jay, Esq.
Korosi, Joseph, Budapest.
Kyshe, J. B., Esq., Mauritius.

L'Economista d' Italia, Editor of.
Labourers' Friend, The Editor of.
Leipsic, Statistical Bureau of.
Lloyds, The Committee of.
London Hospital, Secretary of.
Long, Rev. J., Calcutta.

Madrid, Geographical Society of.
„ Institucion libre de Emeñanza.
Madsen, C. L., Esq, Copenhagen.
Manchester Literary and Philosophical Society.
Manchester Statistical Society.
Mayr, Dr. Georg, Munich.
Metcalfe, Richard, Esq., London.
Mining Registrar, Victoria.
Mallet, Sir Louis.

Nature, The Editor of, London.
Netherlands, The, Legation of, London.
Newbigging, Thomas, Esq., A.I.C.E.
Neumann, Dr. Fr. Xav., Leipzic.
New South Wales, Agent-General of.
„ „ Registrar-General.
New Zealand, Registrar-General.
Norway, The Minister of the Interior.
„ The Royal University of.
Nowell, E. C., Esq., Tasmania.

Orange, William, M.D., F.S.S.
Ourt, Dr. A. J., Penn., U.S.A.

Prevost, M., Geneva.
Purdy, F., Esq., F.S.S., London.

Quaritch, Bernard, Esq., London.
Quekett Microscopical Club.
Queensland, Registrar-General of.

Raikes, Capt. G. A., London.
Ravenstein, E. G., Esq., London.
Ray, Robert, Esq., Adelaide.
Redgrave, Alexander, Esq., F.S.S.
Reid, George H., Esq., Sydney.
Review, The Editor of.
Revue Bibliographique Universelle, The Editor of, Paris.
Rivista Europea, The Editor of.
Roberts, C., Esq., London.
Romanelli, Signor A., Rome.
Rome, Giunta Centrale de Statistica.

During the Year 1877—*Continued.*

Roumania, Minister of Interior
Royal Agricultural Society.
„ Asiatic Society.
„ „ „ Bombay Branch.
„ Colonial Institute.
„ Geographical Society.
„ Institution.
„ Med. and Chirurgical Society.
„ Society of Edinburgh.
„ Society of Tasmania.
„ Society of Victoria.
„ United Service Institution.
Russell, Dr. J. B., Glasgow.
Russell, The Right Hon. the Earl of.

St. Bartholomew's Hospital, London.
St. George's Hospital, London.
Saxony, The Statistical Bureau of.
Schneidau, C. J., Esq., F.S.S.
Schleisner, Dr. P. A., Copenhagen.
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